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ABSTRACT

Written with the broad goal of involving high school students in Bristol Bay, Alaska, in the planning and design of their region's future, this combined teacher guide and student text contains the final three units of a seven-unit curriculum. Unit V looks at oil development in the Bering Sea, covering topics such as Alaska's dependence on oil, leasing oil tracts, impacts on the marine environment, and detecting oil related damage to the village environment. Unit VI explores the potential mineral wealth of Bristol Bay and the costs and benefits of mineral exploration and development. Unit VII examines reasons for state land disposals, the concept of private ownership, and impacts of state land disposal. Each unit states objectives, lists lessons in the unit, and specifies instructional materials needed. Each lesson (14 for Unit V, 8 for Unit VI, and 6 for Unit VII) includes objectives for the learner and procedures for the teacher. Background reading material for students is provided from sources such as newsletters, editorials, news reports, and journal articles. Activities for students include designing a survey to study attitudes regarding oil and gas developments, conducting the survey with village residents, and organizing and analyzing survey results. (JHZ)

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PLANNING, DEVELOPMENT, AND CHANGE
IN BRISTOL BAY

UNIT V: OIL AND GAS DEVELOPMENT
UNIT VI: MINERALS AND MINING
UNIT VII: STATE LAND DISPOSAL

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PLANNING, DEVELOPMENT, AND CHANGE
IN BRISTOL BAY

A High School Curriculum
Teacher Guide and Student Text

prepared by:

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December 1984

Revised 1985

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UNIT V: OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

OBJECTIVES:

1. The students will know where and when potential oil lease sales will occur in Bristol Bay.
2. The students will be able to evaluate their personal dependence on oil products along with their community's dependence on oil products.
3. The students will be able to determine the economic benefits of Alaskan crude oil to the state and to Bristol Bay.
4. The students will be able to interpret map overlays and determine potential conflicts between competing uses.
5. The students will be able to predict potential changes between cultural, environmental, and social conditions and what oil exploration and development may bring.
6. The students will know that oil is a non-renewable resource and be able to compare non-renewable resources of Bristol Bay to renewable resources.
7. The students will be able to critically evaluate differing viewpoints concerning oil development in the Bering Sea.
8. The students will frame their own questions and concerns regarding oil development.
9. The students will participate in public forums regarding oil development, when and if appropriate.

LESSONS:

1. Introduction to Oil Development in the Bering Sea.
2. Exploring Our Dependence Upon Oil.
3. Oil Revenues.
4. Leasing Oil Tracts.
5. Oil and Gas: A Pro-Development View.
6. Oil and Gas: An Opposing View.
7. Attitude Survey: Oil and Gas in the Bering Sea.
8. The Many Sides of The Controversy—Written Arguments.
9. The Controversies Debated.

10. Impacts on the Marine Environment.
11. On-shore Oil Development: A Study of Sensitive Areas.
12. Detecting Oil Related Damage to the Village Environment.
13. Values and Oil.
14. Oil Spill Simulation in the Marine Environment.

MATERIALS LIST: Note: Items in brackets refer to either resources available in your school or resources that must be requested in advance.

Lesson 1 - Text

"Oil & Gas Development" in Alaska People Planning Land and Resources Education: A Reader, April 1980, pp. 76-81.

[classroom world map or globe]

Lesson 3 - "Alaska Mineral Revenues," by G. Michael Doogan in Alaska's Oil/Gas and Mineral Industry, 1982, pp. 200-205.

"Alaska Oil and Gas Industry Facts," by AOGA.

"Oil Development's vital role in state economy," by Michael Economides. Fairbanks Daily News Miner, August 12, 1982.

"Oil Revenues Look Gloomy as Ever," by Ann Cony. Anchorage Daily News, January 16, 1983.

"Chevron Asks Approval to Drill Exploratory Well in Cook Inlet." Anchorage Daily News, January 16, 1983.

"Reduced Oil Income Means Hard Times for Alaska," by Eric Sutcliffe. Anchorage Daily News, January 20, 1983.

Lesson 4 - Text

Accompanying package of overlays.

Lesson 5 - [Videotape:* "Alaska's Offshore Oil: A Very Natural Resource" (30 min.)]

Lesson 6 - [Videotape:* Katchemak Bay: A Question of Progress." (30 min.)]

[Videotape:* "Rope to Our Roots." (30 min.)]

Lesson 10 - Accompanying package of overlays.

[St. George Basin map and/or North Aleutian Shelf Proposed Lease Sale map—available for loan from the Bristol Bay Curriculum Project]

"Oil Explorers Vow to Avoid Salmon Project." Anchorage Daily News, July 6, 1983.

Lesson 11 - Accompanying package of overlays.

[School library copy of the Bristol Bay Cooperative Management Plan]

Audiotape and transcript of Greg Peters.

Lesson 14 - [Bristol Bay Environment: A Background Study of Available Knowledge, (AEIDC), 1974, pp. 784-819. Available upon request from the Bristol Bay Curriculum Project.]

*A copy of the videotapes may be obtained by writing

College of Human and Rural Development
Resource Center
505 Gruening Building
University of Alaska-Fairbanks
Fairbanks, Alaska 99775

A blank VHS tape must accompany each request. Whenever possible, more than one program will be dubbed onto a tape.

INTRODUCTION

The issues and conflicts that you will discover in this lesson are critical to Bristol Bay's future. As you become informed about the issues, we hope that there will be opportunities for you to participate in the decision-making process. Right now the Coastal Resource Service Area Board is still developing rules and regulations, and is collecting information on how oil development may affect the fisheries, the land, and the villages. This group is encouraging you to offer suggestions on how, when, where, and what to regulate and restrict. In other words, through public participation you can influence your future!

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 1: Introduction to Oil Development in the Bering Sea

Time: Two class periods.

Objectives:

1. Students will understand that oil is a non-renewable resource.
2. Students will become aware of the major places in the world where oil is produced.
3. Students will become aware of the relationship between land claims and Alaskan oil.
4. Students will understand that many of the accessible oil producing areas are running down, making more inaccessible places such as the Alaskan outer continental shelf more attractive.

Procedures:

1. Have the students read the text and "Oil and Gas Development," in Alaska People Planning Land and Resources Education: A. Reader, April 1980, pp. 76-81.
2. Use a world map and show students the major oil producing places.
3. Have students answer Student Activity sheet.

Text:

What do pre-historic animals and plants have in common with the Alaska Native Lands Claims Settlement Act? Are you puzzled? Some hints: The connection is the same thing that plastics and agricultural products like lettuce and tomatoes have in common. More hints: Pre-historic animals and plants and ANCSA have in common the same thing that connects kerosene, synthetic rubber tires, and cellophane packaging.

The answer is OIL. Pre-historic animals and plants slowly, in geological time, were transformed (changed) into oil. A drive to develop oil was one of the pressures behind the claims settlement. Without direct and clear ownership of the lands from Prudhoe Bay to Valdez, oil development and production could not have been possible. Oil is one of the critical building blocks of our society. Oil derivatives are used in making plastics, fertilizers (which fuel the growth of agriculture crops) and synthetic rubber.

In Alaska the revenues (money) earned by the state, called "royalties," contribute to the building of our schools and to many capital projects, such as airport runways. Oil revenues account for over 90 percent of this state's wealth!

Besides use of oil to fuel our trucks, cars, three-wheelers, skiffs, and air-taxis, the rest of the world is also dependent on oil for fuel, fertilizers, and synthetic products such as plastic. This demand for oil has steadily increased over the last twenty years. More recently that demand has leveled off and dropped in some instances, but the supply of oil is decreasing. Why? You know. Let's say you fill your three-wheeler up with gasoline (an oil product) and you drive it and drive it until it runs out. You need more. You do the whole process over again. Once you use the gasoline to power your three-wheeler, you cannot use that same fuel again. Oil and gasoline are nonrenewable. This fact, coupled with high demand, has encouraged the oil industry to look for new sources of oil.

The oil industry is moving from the continental U.S.A. to such places as the outer continental shelf (OCS). This off-shore oil exploration and development brings the oil industry to Alaska and to the Bering Sea in particular.

Where, when, and how much oil exploration and drilling will occur in the Bering Sea is still an open question. The many interested parties to oil production include: the oil industry, state and federal governments, subsistence users, environmentalists, and Native corporations. Depending on who you are, you may have a very different opinion on what should occur in the Bering Sea. The rest of this unit will help you explore the complex issues surrounding oil development in Bristol Bay. Some of you already have an opinion. What is that opinion based on—fact or fiction? Are your arguments strong enough to convince other people? They need to be. This unit attempts to assist you in thinking critically about oil development.

oil & gas development



background

Within the last twenty-five years, three events have occurred which have and will continue to have, far-reaching impacts on Alaska's land and natural resource development. Statehood in 1959 initiated an important change in the ownership and management of Alaska's land and natural resources. Through statehood, the state received more than 25 percent of Alaska's land. This event ended federal dominance of Alaska land ownership and, through the statehood land grant, gave Alaska people an opportunity to

determine how to use their land and resources. The second event was the Alaska Native Claims Settlement Act of 1971, giving Alaska's Eskimos, Indians, and Aleuts ownership of almost 10 percent of Alaska's land. Additionally, it set the stage for determining which of the remaining federal lands will be designated wilderness, and which will be set aside for special public uses such as national parks, wildlife refuges, forests, and wild and scenic rivers. The third event was the 1968 discovery of oil at Prudhoe Bay and the subsequent development of this oilfield.

But Prudhoe Bay wasn't the beginning of oil and gas development in Alaska. Oil seeps were observed in southcentral and arctic Alaska by Natives long before European settlement. Oilfields were first developed at Katalla in the Gulf of Alaska in the 1920's and 30's, and at the Swanson River field, near Kenai, in 1957. However, the Prudhoe Bay discovery was, by far, the most significant. It was the largest oil discovery in North America and the seventh largest in the world. Aside from the sheer magnitude of the discovery, another factor adds to its significance. Prudhoe Bay is being developed at a time when other American sources of oil and natural gas are declining, whereas the demand for this resource is still very high. Beyond Prudhoe Bay, Alaska has potential for discovering more oil and gas. Geologists estimate Prudhoe Bay to contain as much as 12 billion barrels of oil. While the odds are heavily against the discovery of new fields the size of Prudhoe Bay, there is a good likelihood that several discoveries in the giant category, of 100 million barrels or greater, will be made in the future.

Oil and gas are important because both are excellent fuels, or sources of energy, as well as valuable raw materials. Currently in Alaska, 85 percent of all the energy consumed comes from oil and gas. More than half of this is used for transportation—fuel for vehicles such as airplanes, boats, cars, and snowmobiles. The remainder is used to heat homes and generate electricity. Today, virtually every Alaska community depends on oil or natural gas to generate some of its electricity. As raw materials, oil and natural gas are extremely versatile. There is probably no other single raw material which has been converted into so many products and substances—plastic and other synthetics (nylon,

rubber, vinyl, polyester, etc.), fertilizer, solvent, medicine, wax, detergent, asphalt, and resin.

Although most of us live quite far away from the Prudhoe Bay oilfields and the transAlaska pipeline, this development has had a significant impact on Alaskans due to the amount of money it generates for the state government and the Alaska economy. It has been estimated that, in

1979 alone, the State of Alaska would receive 709 million dollars in petroleum-related revenues. These revenues are generated primarily because the state owns the land containing the oil and gas, as well as the oil and gas itself. Oil companies lease the land from the state and, with the lease, obtain the right for the sale, exploration, production, processing and marketing of the oil. (The state's share of the oil and gas after leasing is



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called a royalty.) An economist compared the 709 million dollars to the amount of money the state receives from other natural resources industries. To equal petroleum-related revenues, money from commercial fisheries would have to



increase by a factor of 80. For coal to generate as much money, Alaska would need to mine five times the total United States coal production. It would take 207 copper mines, each producing more than 14 million tons per year, to produce comparable revenues for the state. Clearly, the economic impact of oil and gas development is significant. Although Prudhoe Bay's production will decline in the 1990's, most experts agree that oil and gas will continue to be the mainstay of Alaska's economy for the next 50 to 100 years.

Oil and gas development is frequently considered a form of mining, but oil is not really a mineral; it is organic. Oil and natural gas are derived largely from the remains of plants and animals that lived in the sea or were transplanted by wind and water from the land and deposited in the sea. Living organisms are composed of materials which reduce to hydrocarbons. Some of these hydrocarbons were deposited and compacted in the sands and clays under the seas. The decomposition and compaction of these marine organisms resulted in the formation of oils and natural gases. Once formed, oil and natural gas

migrate from source beds to reservoir beds, and accumulate in porous rocks in quantities great enough to form today's recoverable deposits.

Except for a few places where they naturally seep out at the surface, oil and gas deposits are found trapped at various depths below the earth's surface, either on land or under the sea. In Alaska, significant oil and gas resources are believed to be located under the shallow seas off the coast. These submerged lands more than three miles beyond Alaska's coastline are called the outer continental shelf (OCS). (The state has jurisdiction over submerged lands within three miles of its coast; the federal government controls the area beyond.) Much future oil and gas exploration, and possible development, will be concentrated on these OCS lands. Whether on land or under the ocean, the exploration, extraction, transportation, and processing of oil and gas require land—land for drilling pads, construction staging and storage areas, pipelines and pump stations, refineries, employee housing, shipping ports, tank storage facilities, roads, airstrips, and numerous other uses.

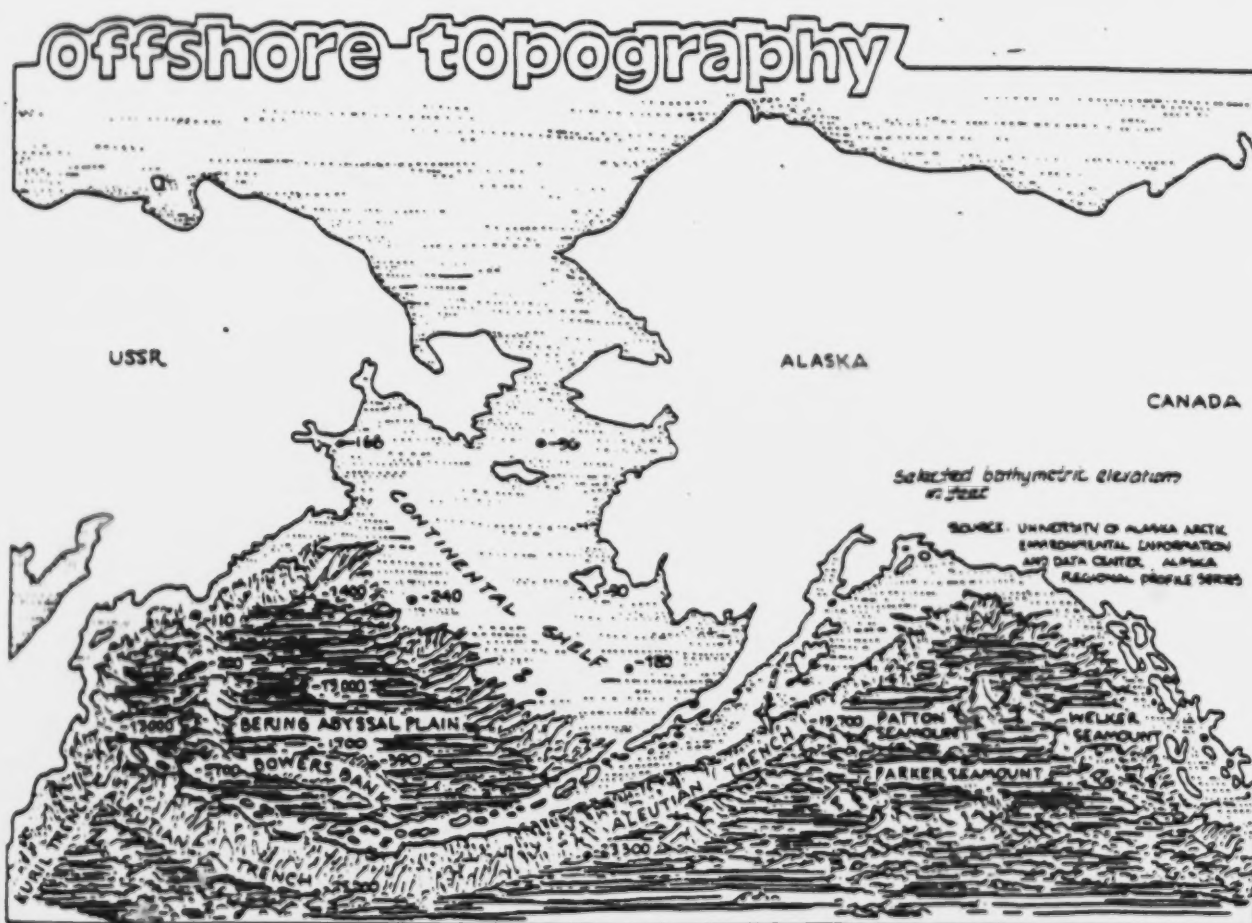
Oil and gas development is a heavy industrial activity and the land uses associated with it are largely industrial uses. Consequently, as with any intensive use of land, conflicts with other land uses can arise. Careful planning is needed to see that oil and gas continue to play an important role in Alaska's economy and meet America's needs for fuel and raw materials, as well as to minimize the conflicts and problems created by this activity.

One important concern is the location of potential future oil fields. As already mentioned, most geologists agree that the greatest potential for oil and gas in Alaska will not be on the land, but offshore, on the outer continental shelf. This has many important implications. Oil discovered beyond the three-mile line belongs to the federal government. Consequently, revenue to the state government would not be nearly as great as those from Prudhoe Bay where the state owns both the land and the oil. This revenue can be important because, although the actual drilling takes place out on the ocean, much of the impact of this exploration and possible development is on the nearby land. It is on the land that construction preparation takes place, materials

are stored, drilling platform crews live, and their families shop, go to school and recreate. Offshore drilling can create a boom town, and roads, housing, schools, and other facilities may not be adequate for the numbers of people living there. It is therefore important that offshore exploration and development be coordinated with onshore land planning to meet the immediate needs of the people during oil and gas development, and to plan for after the boom—when the oil is all pumped out, or when no oil is discovered. While the actual leasing is largely controlled by the federal government, the impacts on the land require the involvement of the local communities as well as local, state and federal government agencies.

OCS development often occurs in some of the world's most demanding natural environments,

with strong winds, frequent storms, unpredictable sea-ice conditions, and extreme temperatures the rule rather than the exception. Additionally, OCS waters are often very rich in marine life and very important to both commercial fishing and Native subsistence interests. This conflict between oil and gas development and fisheries undoubtedly will always exist. It stems from the fact that oil and gas exploration, extraction, and transportation can interfere with normal fishing operations when the two activities use the same areas. (In some cases, such as in the Gulf of Mexico, offshore drilling platforms may actually enhance commercial fishing because they provide space to which a variety of organisms may attach themselves and thus they increase the food supply). Of greater concern is the possible impact of oil and gas development on the fisheries resources themselves. Oil spills, and other



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pollution associated with drilling and transporting oil, are probably the greatest threat. Oil in the marine environment can alter the delicate balance between plants and animals and, consequently, the valuable fish and wildlife populations. Already an offshore oil and gas lease sale in Kachemak Bay has been reversed because of concerns regarding possible harm to the Cook Inlet commercial and sport fishing industries. As lease sales are being planned in Bristol Bay, the Gulf of Alaska, and the Beaufort and Chukchi seas, this conflict may continue because all of these areas are important to commercial and subsistence fishing interests.

Oil and gas development also can result in conflicts on the land. Transportation of crude oil to the refineries and places where it is used usually requires pipelines. Pipelines require roads, bridges, pumping stations, camps, terminals and numerous other land uses. Pipelines often cross lands under various ownerships, open up new areas to access by road, interfere with wildlife migrations, and conflict with special land use designations such as wildlife refuges and wilderness areas. There is growing concern about transporting all of this oil outside Alaska to be refined and processed, thus removing a valuable resource while providing few jobs in the state. Consequently there is interest in doing primary processing of some of this gas and oil within the state so that more local economies might benefit.

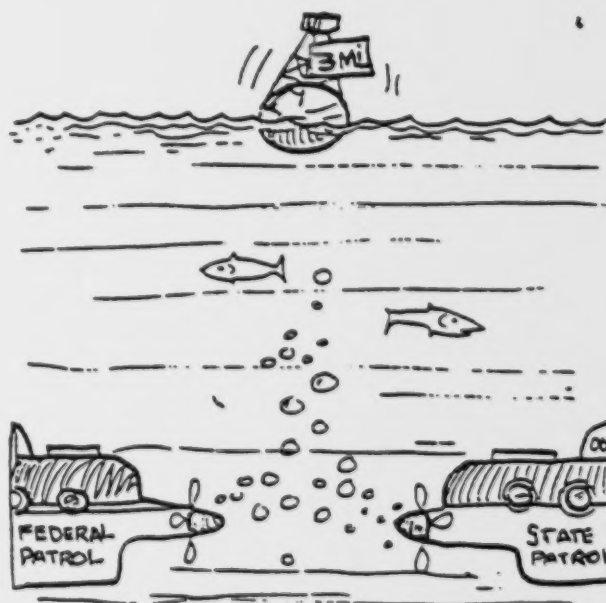
Another important issue involves the state's spending of the large amounts of money it will be receiving during the oil and gas era. Recoverable oil at Prudhoe Bay one day will have been extracted—thus this source of revenue is only temporary. Many Alaskans feel this money should be used to help develop Alaska's renewable resource industries such as agriculture, timber, fisheries, recreation and tourism. Oil and gas revenues provide a significant opportunity for Alaskans to plan for their future in a manner which can help to insure that the post-petroleum era will continue to meet Alaska's need for jobs, government services, and a stable economy. The following interviews provide some additional perspectives on oil and gas development in Alaska today. Other portions of this reader, particularly the chapter on natural resources, provide additional perspectives on some other natural

resources important to Alaskans—not only today, but after the oil and gas era has passed.

real people

TIM BRADNER
OIL AND GAS COMPANY REPRESENTATIVE,
ANCHORAGE

Oil in Alaska is found both on land and offshore under the sea waters surrounding the northern and western coasts of Alaska. Some of the land is owned by the federal government, some by the state and local governments, and a small portion is on private land. Offshore, the state controls any resources up to three miles from land, including that distance outward from any islands which are part of the state. The federal government controls oil resources from three to 12 miles offshore. These two governmental authorities oversee oil and gas development and set guidelines as to who can explore for the petroleum resources and the restrictions under which exploration can take place. They also charge money—by selling leases—for the right to explore for oil. In addition, local governments can exert some control over how exploration can take place, mainly through their coastal zone management controls and taxation powers.



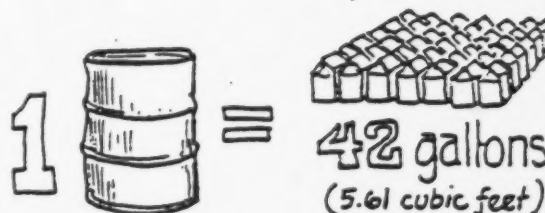
Companies know where oil exploration rights are going to be offered because the state and federal government have developed five-year plans which say which areas will be opened. The five-year plans are developed in much the same way other planning efforts take place. People can nominate lands they think should be considered for leasing. The government doesn't sell the land itself, only the right to explore and drill for petroleum. The right to explore includes some rights to develop the land on the lease sites—or onshore from the sites if they are underwater—as well as drilling platforms over the submerged land itself.

If companies nominate land they believe should be leased, the companies have already done intensive geological work in the area themselves and believe the evidence shows that oil may actually exist there. Companies nominate lands they think have the best chance of producing profitable quantities of oil. To be able to make decisions this important, the companies have to spend large amounts of money to gather information of many kinds. This information is based on seismic information gathered from very sensitive electronic instruments that can map the underground rock formations as sounds bounce back from the impact of explosions set off by explosive charges similar to dynamite. Other information is gathered from actual drilling to find out what kind of rock lies underneath the surface of the ground, whether on land or underwater. Most oil has been found in areas that either are underwater or once were, in sedimentary basins of porous rock—such as limestone or sandstone into which oil can seep. Geologists look for areas of the world that fit these descriptions and that contain these kinds of rock formations.

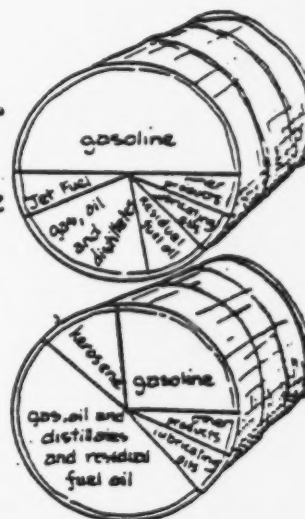
Environmental considerations are becoming more important all the time in oil and gas exploration, both because people are more interested in environmental protection and because exploration is taking place in more environmentally-sensitive areas than ever before. For example, the Beaufort Sea north of Alaska is probably one of the most environmentally-fragile areas of the world, yet also has some of the worst weather in the world. Therefore, the environmental restrictions on drilling operations are said to be the most restrictive ever developed by any government to protect the natural environment.

Communities can be affected in both good and bad ways by oil and gas development. The best way local people and their local governments can have control over oil exploration is through their planning and zoning process.

Barrels of Oil



Some "average" yields from a barrel of crude oil.



THE YIELD VARIES WITH THE NATURE OF THE CRUDE OIL, THE REFINING METHODS AND THE DEMAND FOR CERTAIN PRODUCTS SUCH AS GASOLINE, JET FUEL AND HOME HEATING OIL.

THE ESTIMATED RECOVERABLE OIL AT PRUDHOE BAY IS 9.6 BILLION BARRELS.

FULL PRODUCTION CAPACITY AT PRUDHOE BAY IS 1.2 MILLION BARRELS OF OIL PER DAY.

IT WOULD TAKE 22 YEARS TO PUMP 9.6 BILLION BARRELS OF OIL AT A RATE OF 1.2 MILLION BARRELS PER DAY.

SOURCES: BERGER AND ANDERSON, MODERN PETROLEUM A BASIC PRIMER OF THE INDUSTRY, 1978. ALASKA OIL AND GAS ASSOCIATION, ALASKA FACTS FOR THE OIL AND GAS INDUSTRY.

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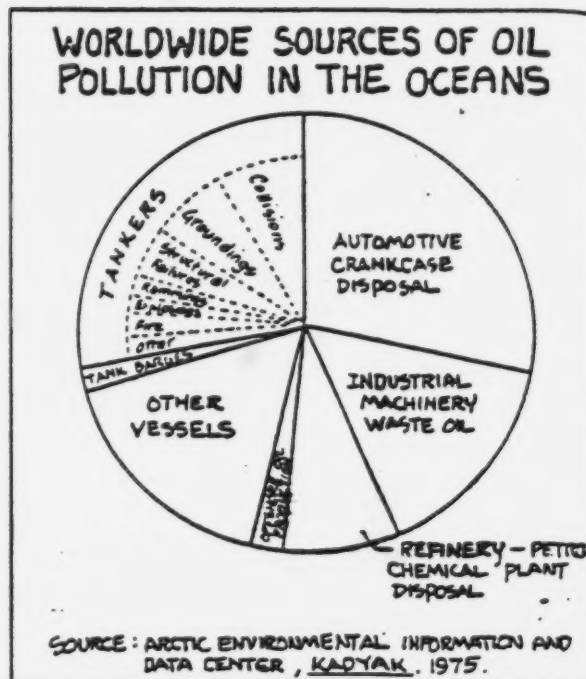
For offshore development in regard to coastal communities, the coastal zone management plan the communities develop is very important. The whole idea of coastal zone management is to give local, state, and federal governments a way to coordinate their interests in coastal waters. Oil exploration can create jobs and business for local companies, especially during the construction period. Before construction takes place, there is less local benefit, but even then, some jobs will be created as well as new business for local hotels, air taxi services and supply stores.

When actual production starts, only a few jobs are needed—mostly highly technical—so some of the earlier job benefits disappear. Communities also benefit in other ways. They benefit mostly from the taxes they collect from companies for buildings, pipelines, and other property, as well as a tax on the oil actually produced. In addition, the state taxes oil companies on oil produced from state lands, including local lands. This benefits the local community along with the rest of the state. However, without proper planning, communities can be overwhelmed by the sudden need for housing, water, electricity, and other services.

Onshore, there are fewer conflicts but some still exist. Oil and gas development can exist alongside agriculture, forestry, industry, mining, and many other types of land use. It can also co-exist with wildlife management, as in the Swanson River oil field that sits in a moose range. However, oil development is not consistent with wilderness, and the public and its government must decide when it is worth giving up a pristine area to develop oil or any other resource. We have learned many lessons in how to do the job right with as little environmental impact as possible. Scars remain from earlier exploration efforts in some otherwise pristine areas; but we know much more today about how to protect the land than we did when those wells were drilled. There must be stringent regulations to prevent blow-outs (uncontrolled flows of oil caused by punching into a high-pressure oil deposit). The state has very strict regulations about that, and companies don't like blow-outs to happen any more than anyone else because they are difficult and expensive to control. During the early days of Prudhoe Bay, there was also unnecessary harassment of bears and other animals by some thoughtless people. That can be controlled by educating workers that the animals have a right to be left alone.

People also have a well-justified concern about oil spills. There are heavy fines if oil is spilled, in addition to the income lost by the owners of the oil and costs of oil

cleanup if spills do occur. Tight precautions are taken to prevent spills from happening. Small spills during loading and unloading also can happen, and both the state and federal governments issue restrictions and permits which discourage these losses.



Oil exploration will continue to be important in Alaska, and will benefit the entire nation by helping control our dependence on foreign petroleum resources. The state has benefitted in many ways from the billions of dollars oil has provided up to now and will continue to provide in the future. Alaskans also have a responsibility to see to it that development takes place safely and in a way that will keep development from overwhelming the abilities of local communities to deal with the change.

KAY BROWN
OIL & GAS SPECIALIST
ALASKA DEPT. OF NATURAL RESOURCES
JUNEAU

Oil has become the most significant factor in Alaska's economy. It is responsible for a large share of the great population growth during the past ten years; much of the increase in size and services of the state government, and new jobs in the state. My salary is dependent on oil as a state employee working on oil and gas policy; my state is wealthy because of the large oil deposits found so far; so

personally benefit from the oil discovery, as do many other people. However, I also sympathize with the deep desire of the Native people and others to retain their culture, which is rapidly disintegrating through no fault of their own. Maybe this cultural and social change would have happened anyway, but Prudhoe Bay oil has accelerated the process. I also am sensitive to the worries of people who are concerned about environmental problems that could result from past or future oil discoveries. Environmental mishaps could take place despite the best efforts to prevent accidents. But those aren't the only impacts Alaska has had to live with as the discovery of oil caused rapid development in the state.

There are many impacts of oil on Alaska's economy and societies, some good and others not so good. The impact isn't a one-time thing either; the changes that occur must be considered permanent, or nearly so. There are changes in the uses of land, and cultural, social, and economic changes that will last indefinitely. Small isolated communities have been faced with the influx of thousands of new people, disturbing the ways things have been done for generations. Part of the problems is because the newcomers haven't been sensitive to the ways and desires of the traditional cultures. The problems have been particularly severe because of the fact that the major oil

TIGHT PRECAUTIONS ARE TAKEN
TO PREVENT OIL SPILLS...



discoveries were close to traditional Native villages, disrupting a way of life that has survived for thousands of years, but was least ready to deal with the sudden changes.

Development of oil and gas resources can cause major conflicts anywhere it happens, however. It isn't so much a question of whether there is enough room in Alaska for development—Alaska is a huge place. But the changes come so suddenly, and are so sharply different from the traditional activities of communities, that problems are inevitable. Construction of drilling sites, pipelines, physical buildings to support offshore drilling operations, and other construction associated with oil have impacts on the physical environment, as well as on the lives of people who live in the area. Fishermen may worry that an oil spill will kill the fish they depend upon for economic survival. Environmentalists and those who live off the wildlife worry about similar problems that could affect whales, caribou, and other wildlife.

Communities can suddenly find that they have to deal with hundreds or thousands of new people. This means that housing must be developed, and land set aside on which to put the houses, trailers, and dormitories. Communities find themselves unable to work fast enough to provide water, electricity, sewage, and other essential services—right down to garbage collecting. Rapid development of any kind is a disaster for communities because there is no way they can deal with the huge population increase as fast as it takes place. They often find that there aren't enough firemen to provide adequate fire protection, or even enough fire trucks or enough water to put fires out once they get started. Places that grow faster than people can plan for are called boom towns, and they are always subject to social uproar and disorder. The people who suffer are the ones who live there, and the ones who suffer most are often the people who lived in the community before development came and weren't prepared for the onslaught.

Many other places in the world have had to deal with these changes before Alaska, and they survived. But people in Alaska should expect that there will be vast changes from the traditional way of life here, whether they like it or not. Massive oil development has taken place in the Gulf of Mexico, offshore of Texas, and other states, and the fishing fleets have survived. But there have been tremendous increases in population, new industries that have caused air pollution and other problems in the physical and social environments.

We all have benefitted from the money that oil has

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part m

brought to Alaska; there are more jobs, and the state has been able to pay for new projects and services that it could never have afforded if oil hadn't been discovered. The money in the future will allow us to invest to develop other resource industries in Alaska which will make more jobs for Alaskans in our fisheries, in farming, and in other ways.

I WORRY A
LOT ABOUT
THE IMPACT
OF OIL...



remember

- Oil and gas money is presently the greatest contributor to Alaska's economy and should continue to be so for the next 50 to 100 years.
- The benefits of oil and gas exploration and development include jobs and money; the ability of local and state governments to provide better services to people through additional tax and leasing monies; and the ability to help meet America's demand for fuel and raw materials at a time when reserves are diminishing and foreign supplies are becoming increasingly expensive and uncertain.
- Alaska's greatest oil and gas potential is considered to be beneath the shallow offshore waters. The state owns the submerged lands within three miles of the coast; the federal government owns the outer continental shelf — those lands beyond the three-mile limit.
- Offshore oil and gas developments can have significant impacts on nearby communities. There may be physical impacts—land needed for onshore support facilities such as docks, materials storage, heliports, tank farms, homes and roads—and social impacts such as overcrowding in schools, inadequate hospital space, and poor health conditions as a result of inadequate water and sewage treatment facilities.
- Oil and gas development can be compatible with many other land uses including timber harvesting, mining, agriculture, and even wildlife management. In some instances there may be conflicts. For example, commercial and subsistence fishing may be incompatible with oil and gas development when it takes place offshore. Land-use situations which require a designation of undeveloped lands, such as wilderness areas, would cause conflicts for oil and gas development by precluding necessary land development.

STUDENT ACTIVITY SHEET

QUESTIONS TO ANSWER WHEN LESSON IS COMPLETE:

1. Of what compound is oil composed?
2. What is OCS?
3. State a conflict that could occur because of off-shore oil development.
4. What on-shore problems could occur because of off-shore development?
Name two.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 2: Exploring Our Dependence Upon Oil

Time: One class period.

Objective:

Students will determine how much their lives are dependent upon the use of oil and oil derivatives.

Procedures:

1. As the class to imagine what village life would be like if every oil-using machine or material was removed. Have the class work in small groups. Give them time to imagine. Then have each group list out all the items that would be missing from the village. Note all of them on the board.
2. Have each student write an essay about what life would be like today in the village if all of the above items were missing from the village.
3. Discuss the essays.

Optional:

4. Have an "oil-less" day. Do not use any product that is dependent on oil or made from oil. Use the above list and add other oil-derived products. Once the list is complete, have the students plan out what their day may be like. Then, if all agree, do not use any oil-based products for one day. Have students share their experiences the next day.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 3: Oil Revenues

Time: Two class periods.

Objectives:

1. Students will determine what share oil revenues play in the state budget.
2. Students will understand that the state of Alaska is highly dependent upon oil revenues.

Procedures:

1. The students will read "Alaska Mineral Revenues," by G. Michael Doogan in Alaska's Geographic Oil/Gas and Mineral Industry, 1982, pp. 200-205; and "Alaska Oil and Gas Industry Facts," by Alaska Oil and Gas Association, (no date); and the various newspaper articles that have been provided.
2. After reading the above, the students will answer the questions on the Student Activity sheet. (Feel free to add your own questions.)

Alaska Mineral Revenues

By G. Michael Doogan

When the First Alaska Legislature convened at Juneau on January 26, 1959, it faced the task of supplying government to 225,000 residents spread over the state's 586,000 square miles.

"We had a thousand crying needs," recalls Ketchikan Representative Oral Freeman, a member of that body, "and we didn't have the money to take care of them all."

What the new state had was \$18.5 million in unrestricted revenues; that is, revenues not dedicated to a specific purpose. Of that, \$8 million (44%) came from the individual income tax.

This lack of funds (\$18.5 million was about \$82 per Alaska resident) had been at the bottom of much opposition to statehood, both in Alaska and Congress.

"We had a bunch of mossbacks in my area who wanted to make it two states

and have the cutoff line at Yakutat," says Freeman. "Their argument was that Southeast produced most of the revenue (from its fisheries) but the rest of the state would spend most of it."

[The Territorial Budget for 1931-1932 shows that 73% of all General Fund revenues came from fisheries.]

Freeman's "mossbacks" had not been the only ones concerned about Alaska's finances. Congressional opponents to admitting Alaska to the Union had argued that the then-territory's miniscule economy would not provide enough money to pay for an adequate state government. Alaska, they claimed, would be a ward of the federal government for years to come.

The framers of the state constitution, who convened in 1955 at the University of Alaska at College, near Fairbanks, had been well aware of the problem of financing state government. As E.L. "Bob" Bartlett, then Alaska's delegate to Congress, had pointed out in his address to the convention, Alaska's resource wealth was the cornerstone of any financial plan for the new state.

"The financial welfare of the future state and the well-being of its present and unborn citizens depend upon the wise administration and oversight of these (resource) developmental activities," Bartlett said. Further, he warned the convention delegates, "if the public domain of Alaska is frittered away without adequate safeguards, the State of Alaska will wend a precarious way along the road that leads eventually to financial insolvency."

Based upon both their concern with the state's solvency and their experience with industries that had taken much away from Alaska and left little behind, the delegates adopted Article VIII of the constitution, dealing with natural resources. Article VIII

An offshore rig conducts exploratory drilling on the Middle Ground Shoals oil field in Cook Inlet in September, 1962. Production from this field, which began in 1965, provided Alaska its own petroleum revenue, which accounted for 21% of total unrestricted revenues by FY 1972. By FY 1982, it is estimated that oil will generate 85% of those revenues. (Steve McCutcheon)

Editor's note: G. Michael Doogan is a former newspaperman and legislative aide who now works as a private fiscal consultant.

year (FY) 1960 (Alaska's fiscal year runs from July 1 to June 30) contained \$2,980.27 in petroleum revenues. Ironically, this revenue came from oil production on federal lands — the Swanson River field discovered in 1957. Provisions of the Mineral Leasing Act of 1920, confirmed in the Statehood Act, required the federal government to give the state 90% of its royalty share.

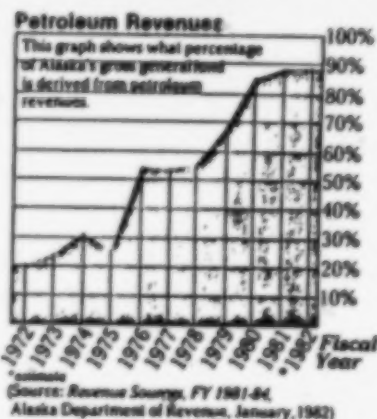
It was not until late 1965, when oil production on the state-leased Middle Ground Shoals field in Cook Inlet began, that the state started receiving its own petroleum revenue. By FY 1972, when three other state-leased Cook Inlet fields were in production, petroleum revenues accounted for 21% of the state's unrestricted revenues.

By FY 1972, the vast Prudhoe Bay field had been discovered (1967-1968) and leased (1969). The lease sale had brought more than \$900 million in bonus bids to

the state and raised the expectation that the field soon would be producing large sums of money on a regular basis for the state. But delays in the construction of the trans-Alaska pipeline, designed to deliver Prudhoe Bay oil to market, shattered that expectation.

Thus, in FY 1976 the state began collecting a reserves tax, a tax on oil still in the ground, to keep itself solvent. Reserves tax collections pushed petroleum revenues to 54% of unrestricted revenues that year and the one following. When oil began flowing through the pipeline in June, 1977, the reserves tax was repealed automatically. Other taxes and the state's royalty clicked in and petroleum revenues accounted for 55% of unrestricted revenues in FY 1978, 69% in FY 1979, and 86% in 1980. By FY 1981 that figure was 89%, and for the next two fiscal years the Alaska Department of Revenue estimates that figure at 85% to 89%.

The long and short of it is that today state revenues are oil revenues. (Not oil and gas, just oil. Natural gas revenues account for about 0.5% of petroleum revenues.) And Prudhoe Bay revenues are most of these. Estimates are that Prudhoe Bay production provides 93% to 95% of unrestricted oil and gas revenues.



Petroleum Revenue Sources

Petroleum revenues come from four types of taxes and three types of ownership rights.

Taxes, and their estimated FY 1983 revenue production (all estimated revenues are subject to change as world oil prices fluctuate), are:

Production (severance) tax, a sliding scale tax on the value of oil and gas at the wellhead, producing \$1.1 billion. The normal production tax rate is 12.25% to

15%, but this decreases under the so-called economic limit factor as production from a well decreases;

Conversation tax, a levy of 1/8th of one cent per barrel on oil, the value of which is included in the production tax figure;

Corporate income tax, a percentage of the income derived by oil and gas companies from their Alaska operations, producing \$258 million;

Property tax, a maximum levy of 20 mills (a mill is 1/10th of one cent per dollar of assessed value) on certain oil and

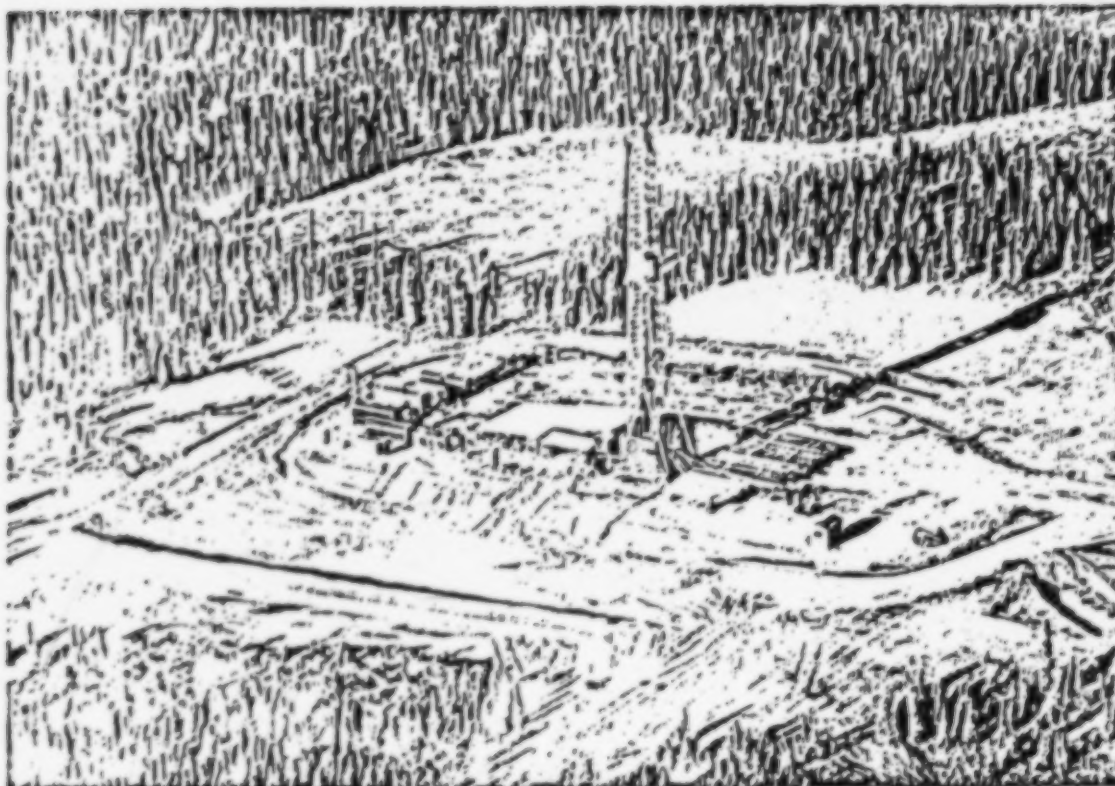
gas exploration, production, and transportation properties, producing \$149 million.

Ownership rights, and their estimated FY 1983 revenue production, are:

Bonuses, cash payments for the right to acquire a lease, for which there is no revenue estimate;

Rents, fees paid annually to maintain rights to lease, producing \$5.5 million;

Royalties, a percentage of oil produced from a lease or its equivalent value in cash, producing \$811 million.

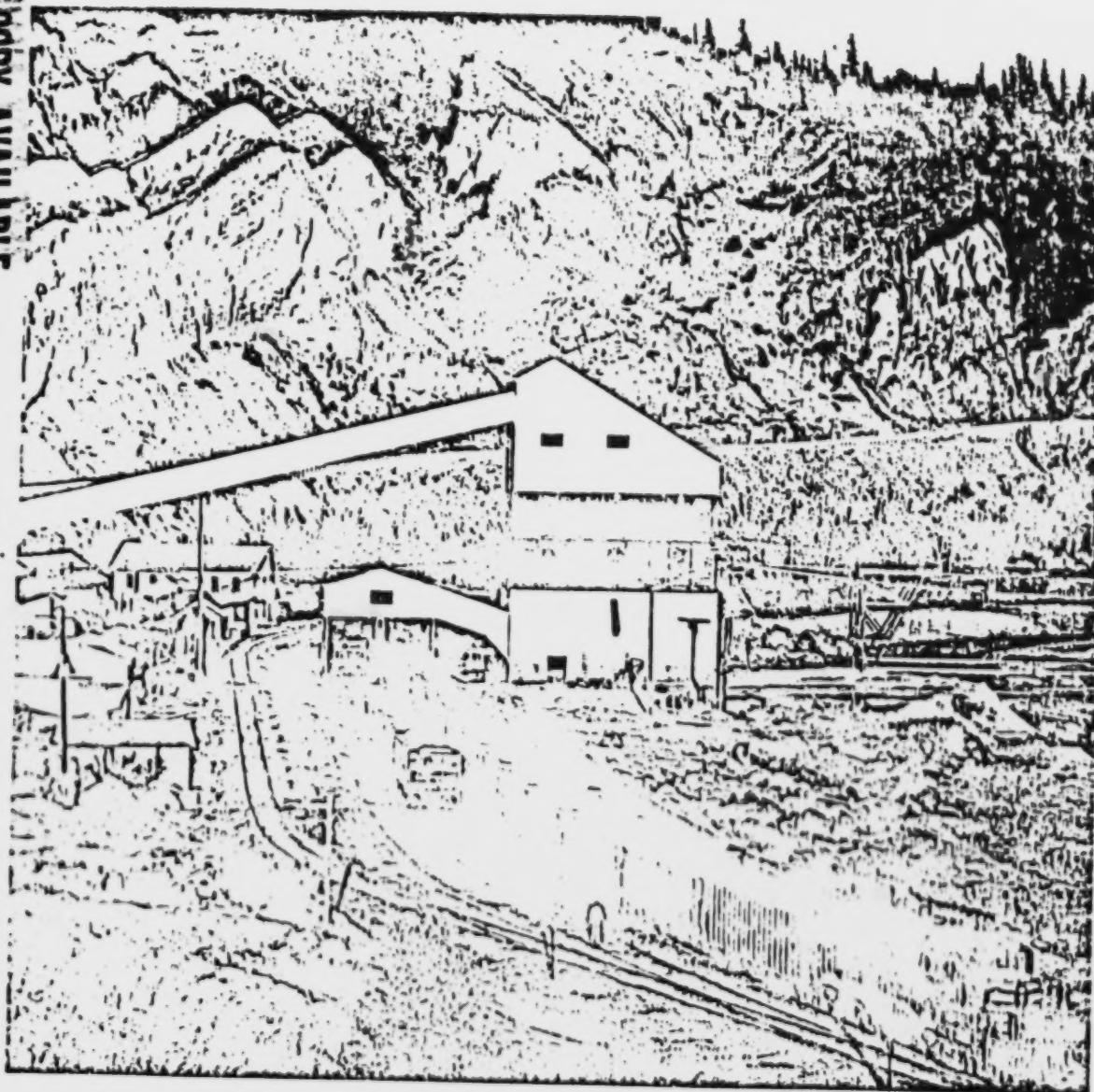


In FY 1960, Alaska received a total of \$2,980 27 in petroleum revenues, all of which came from production on federal lands — the Swanson River field on the Kenai Peninsula. This 1960 photo shows the drill rig of a Standard-Richfield well.
(Steve McCutcheon)

charges the legislature (in Section 2) with providing "for the utilization, development, and conservation of all natural resources belonging to the state, including land and waters, for the maximum benefit of its people. Article VIII also grants (in Section 8) the authority to lease state land for mineral exploration and development. Thus Alaska, in addition to the taxing powers available to all states, secured "for the maximum benefit of its people" additional sources of revenue — bonuses, rents, and royalties — by the convention's decision to allow the state to lease rather than sell its mineral-bearing lands.

This was not done exclusively in the expectation of oil revenues, although many Alaskans were aware at that time that the North Slope — where then-Naval Petroleum Reserve #4 lay — held better than average prospects. Alaskans had faith that the land they would receive upon becoming a state, 104 million acres of it, would hold enough mineral wealth to insure the state's solvency. Perhaps gold, which had fueled Alaska's second boom (the boom cycle to date generally is considered to be furs, gold, fish, military spending, and oil) would make a comeback. Or the vast coal reserves would prove economically exportable. Whatever the expectation, oil proved to be the basket in which most of Alaska's eggs lay.

Unfortunately for the members of the First Alaska Legislature, none of those eggs hatched in time for their budget considerations. Their revenues for Fiscal



In addition to these unrestricted revenues, petroleum production gives the state a significant amount of money for the Alaska Permanent Fund. The fund, the so-called savings account created in 1976 by a voter-approved constitutional amendment, receives a minimum of 25% of non-tax resource revenues. The permanent fund contribution is estimated to be \$273 million in FY 1983.

The ownership income picture has begun to shift significantly. Currently producing fields (Cook Inlet, Prudhoe Bay) were leased under a cash bonus/fixed royalty system, meaning that the bidder offering the most up-front cash (the bonus) got the lease and was required to pay an annual rent and, on production, a fixed 12.5% of the oil produced or its cash equivalent. But some more recent leases were offered under a sliding-scale royalty (the royalty share rises as the value of production rises) or a net profits (the state receives a percentage of the profits produced by a lease) system. Under both of these systems, leases which produce large amounts of oil produce more revenue to the state than they would have

Taxes and royalties collected on coal production account for a very small percentage of Alaska's revenues. Here, coal is being loaded into Alaska Railroad cars at the Usibelli Mine near Healy.
(Steve McCutcheon)

under the cash bonus/fixd royalty system. Both systems defer income and subject the state to higher risk while offering the chance of higher total revenues if the lease produces significant amounts of oil.

The federal government also reaps substantial revenue from petroleum production in Alaska. On its own leases, the federal government traditionally has used a cash bonus/fixd royalty system, with the royalty set at 16.66%. Recently, however, the federal government has used the sliding-scale royalty system on some leases. In addition, the federal government charges the oil companies both an income tax and a windfall profits tax on all United States production, including that in Alaska. The income tax, like any income tax, is a percentage of income, while a windfall profits tax is a percentage of profits on oil sold for more than a certain amount per barrel. Although there are no annual figures readily available for federal petroleum revenue from Alaska operations, a recent state study shows that the federal government will realize about 36.5% of the total profit derived from Prudhoe Bay, or some \$404 billion. (That study shows the state receiving \$327 billion, or about 29.5%, and the oil companies receiving \$372 billion, or about 33.5%.)

Other types of mineral extraction

contribute little to the state's coffers. The major identifiable source of such revenue is the Mining License Tax, a tax levied against mining operations with net income of \$40,000 or more annually. The tax rate is 3% on operations in the \$40,000 to \$50,000 range, 5% on operations between \$50,000 and \$100,000, and 7% on operations of more than \$100,000. In FY 1980, for example, the Mining License Tax produced 0.00002% of unrestricted state revenues (\$56,005.23). In addition the state receives a sliding-scale royalty of between 5 cents and 35 cents a ton on coal production. No figures are available for the small amount of revenue this royalty produces. Likewise, there are no figures available for the amount derived from corporate income tax payments made by mining corporations. Since the state's individual income tax has been repealed, there is no individual income tax revenue from mining.

Although the state's system of dealing with non-petroleum mining currently is under review and may be substantially changed, at present the system is much less sophisticated than that used for oil and gas. Although the state has the authority to lease for minerals, it continues to use the traditional discovery, location, and filing method of awarding mineral leases. Except for the coal royalty, the state charges no royalty on other minerals

although, again, it has the authority to do so. In lieu of lease rents, the state requires proof of annual lease improvements of not less than \$200 annually (except for claims lacking access due to native land claims problems, where an "intent to hold" form must be filed).

Federal policy toward non-petroleum mining is, if anything, even less complicated than that of the state. The federal government charges no taxes against mining operations other than personal or corporate income taxes, receives no royalties, and requires a minimum of \$100 in annual improvements per lease. Other than these differences, federal policy is the same as that of the state. It must be noted, however, that, like state policy, federal policy also is undergoing review and may be changed in the near future.

Until such reviews are completed and changes made, however, the federal and state governments will continue to draw most of their Alaska revenue from oil and gas operations. Unlike their colleagues in the First State Legislature, the members of the Twelfth State Legislature, dealing with FY 1983 revenues in the spring of 1982, are not facing a shortage of funds. Their task is to supply government to 400,000 people using \$2.7 billion in unrestricted revenues (or about \$6,750 per Alaska resident).

ALASKANS AND THE PETROLEUM INDUSTRY

•Alaskans in all parts of the state derive benefits from the petroleum industry. In areas where the industry has direct operations, jobs are created, homes and industrial facilities are constructed and share the local tax burden, and employees become active participants in civic and charitable affairs.

•But Alaskans also benefit indirectly. In fiscal 1981, the petroleum industry paid \$3.2 billion in direct taxes and royalties to the State General Fund. This is 89 percent of all state revenues. According to estimates by the Alaska Department of Revenue, the financial burden carried by the industry for 1982 will amount to nearly \$4.0 billion, or 90 percent of Alaska's general fund revenues.

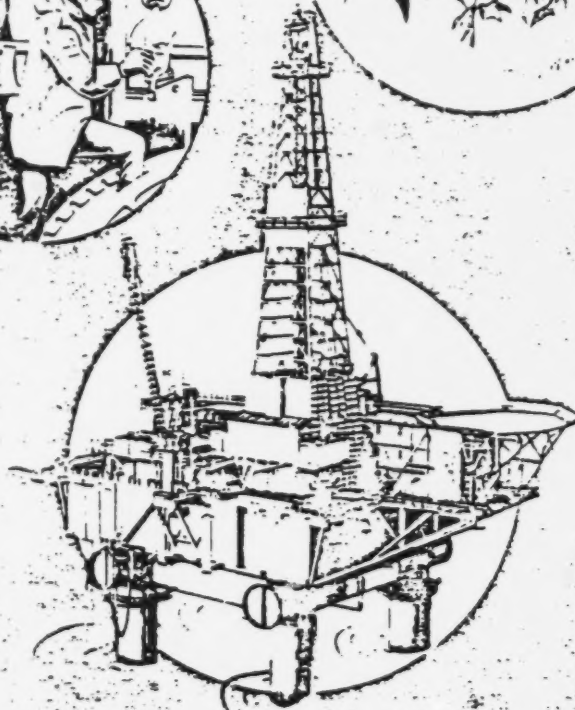
•Every state project that is funded for schools, social programs, public buildings, highways, ferries, state employee salaries, fish and game programs, revenue sharing with local governments, etc., receives an average of more than 80 percent of its funding directly because of the petroleum industry.

•The financial benefits from petroleum resource development make every citizen of Alaska a shareholder in the future of the oil and gas industry.

AOGA

Alaska Oil & Gas Association
Anchorage, Alaska

Alaska Oil and Gas Industry Facts



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GENERAL

■ Alaska's first exploratory well was drilled on the Iniskin Peninsula, Cook Inlet, in 1900, by the Alaska Petroleum Company.

■ Oil was encountered in this first hole at about 700 feet, but a water zone beneath the oil strata cut off the oil flow. Total depth of the well was approximately 1,000 feet.

■ The first commercial oil discovery was made in 1902 near Katalla on the shore of the Gulf of Alaska. This field was produced until 1933.

■ There are 14 sedimentary basins in the State of Alaska that have oil and gas potential. Only two—Cook Inlet and the North Slope basins, have current production.

■ Alaska ranks second in crude oil production and eighth in natural gas production among 31 petroleum producing states.

■ Alaska ranks first in proven crude oil reserves and third in proven gas reserves.

■ Alaska has between 25 to 60 percent of the estimated undiscovered oil and gas remaining in the United States.

■ Alaska has about one-half of one percent of the active drilling wells in the entire United States.

■ Total state oil production is over 1.6 million barrels of oil per day, with Prudhoe Bay alone producing 17.7 percent of the total U.S. output.

DRILLING

■ At the present time, there has been only one well drilled for every 500 square miles in the State of Alaska.

■ The deepest well drilled in the state was the Husky Tunalik Test Well #1, in the National Petroleum Reserve-Alaska. The well was drilled to 20,335 feet, then plugged and abandoned.

■ The crude oil proven reserves estimates by the State Oil and Gas Conservation Commission were 8,454,000,000 barrels of oil at the end of 1980 of which 7,819,000,000 were at Prudhoe Bay. Gas reserves estimates were 32,846 trillion cubic feet.

■ The average Prudhoe Bay well produces 5,600 barrels of oil per day, while the average of all other wells, excluding Prudhoe Bay is 355 barrels per well per day.

■ At present, there are 502 producing oil wells, 71 producing gas wells and 98 service wells in Alaska.

PRODUCTION

■ The reservoir pressure of most oil fields in Alaska is maintained by water and gas injection.

■ Alaska has produced a total of 2,867,675,214 barrels of oil through August, 1981. Of this amount, Prudhoe Bay wells had produced 1,920,694,311 barrels to the same date.

■ There are eight companies which are operators of current oil or gas production wells in Alaska. Many others own an interest in the production.

■ Alaska produced 591,646,190 barrels of oil in 1980.

■ Alaska produced 730,308 mmmcf of casinghead gas plus 156,200 mmmcf dry gas in 1980.

■ The McArthur River Field produces 56.8 percent of the oil produced in southern Alaska.

■ Alaska's deepest oil production is from the Beaver Creek field at 15,200 feet.

■ To date (1980), 1,466 wells have been drilled in Alaska.

OFFSHORE

■ Alaska's offshore area, to a water depth of 200 meters, is approximately 582,900 square miles. This area represents 68.3 percent of the total U.S. continental shelf to that depth.

■ The State of Alaska has estimated there are 394,881 square miles of land offshore its coast on the continental shelf which has potential of containing economic deposits of oil and gas. The U.S. Geological Survey estimates offshore Alaska areas could contain as much as 32 billion barrels of oil.

•There are 14 production platforms in upper Cook Inlet, one of which produces only natural gas.

•Installation of the Cook Inlet platforms challenged industry's ability to cope with unique environmental conditions. The platforms have successfully withstood 33-foot spring tides, ice floes up to six feet thick, and silt-laden currents running up to 8 knots.

•Alaska's upper Cook Inlet—opened to oil and gas development in the 1960's following a state lease sale—is now one of only three offshore producing areas in the United States.

REFINING—MANUFACTURING

•Alaska has three refining plants in operation.

•Two of the refineries are located at Kenai, the third is located at North Pole, near Fairbanks.

•The three refineries have the capacity to process in excess of 110,000 barrels of crude oil daily.

•Refined products from these plants include gasoline, diesel fuel, heating fuels, jet fuel, heavy fuel oil and asphalt.

•There are four topping plants located in Alaska. One is at Prudhoe Bay and three are located along the Trans-Alaska Pipeline route.

•The topping plants can process in excess of 20,000 barrels of crude oil daily.

•These topping plants, or mini-refineries, produce distillates for the internal operation of the Prudhoe Bay facility and three major pump stations.

•Total refinery production exceeds Alaska's daily requirement of 60,000 barrels, thus some refined products and residuals are shipped to the lower 48.

•The crude oil refined at Kenai comes both from offshore (Cook Inlet) and onshore (Swanson River Field) oil fields. Additionally, over 20,000 barrels of North Slope crude oil are processed daily in Kenai by the two refineries. The topping plants and the North Pole refinery use crude from the Prudhoe Bay oil field.

•Alaska has one fertilizer plant. This plant, located at Kenai, uses natural gas as a feed stock to manufacture 3,000 tons per day of ammonia and 2,700 tons per day of urea. The plant employs 310 people and utilizes natural gas from onshore and offshore Cook Inlet. The plant is the largest fertilizer complex on the west coast. Most finished products are shipped to the western United States.

•Alaska has one plant in Kenai which liquifies natural gas. It is the largest plant of its type in the United States. Volume processed in this plant is 150 million cubic feet per day. Forty people are employed at this plant. Seventy percent of raw requirements are received from one platform in Cook Inlet and 30 percent of the stock comes from existing onshore fields.

TRANSPORTATION

•The first petroleum shipment to come to Alaska arrived in Nome in 1888 with a cargo of kerosene and miner's candles. Tankers and barges have been plying Alaskan waters since 1904 bringing products to consumers at more than 100 ports throughout the state.

•The tankers of 1904 could carry only 6,500 barrels. Today, the average vessels loading crude oil at Valdez have capacities of 840,000 barrels.

•With Prudhoe Bay's current production of 1.5 million barrels per day, approximately two tankers load every 24 hours at the Valdez terminal. It would require 231 of the 1904 tankers each day to carry the same amount.

•The 798-mile Trans-Alaska Pipeline brings total pipeline mileage in Alaska to 1,432 miles. The opening of the Trans-Alaska Pipeline road of 370 miles increased the State Highway system by seven percent.

•Economies of pipeline transportation can be illustrated as follows: A shipment of gasoline from North Kenai to Anchorage via commercial truck cost 9.2 cents per gallon. The same shipment via pipeline cost 1.6 cents per gallon.

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■In almost 100 years of petroleum transportation in Alaska, there has not been a single incident which has resulted in significant or lasting damage to the environment.

ECONOMICS

■Petroleum development costs in Alaska are at least four times greater than in other exploration areas of the United States.

■Each additional barrel of oil produced in Alaska helps reduce the \$90 billion per year presently being paid for foreign oil used in the U.S.

■Based on national polls, the average Alaskan believes the petroleum industry makes between 38 and 61 cents on each dollar of sales, instead of the actual profit average of 5 cents.

■During the next decade, the petroleum industry will spend more money each year to find and develop new oil and gas reserves than the U.S. Government spent over the 10-year period in the Apollo project to put a man on the moon. A large percentage of the investment will be made in Alaska.

■When the Prudhoe Bay field reaches full production at 1.2 million b/d, oil companies will have invested some \$14 billion in the production units, pipelines, tankers, and related facilities. Additional billions will be required to produce and deliver the natural gas in the field.

■Based on estimates of the U.S. Geological Survey, there may be more undiscovered oil and gas in Alaska than has been found to date, including Prudhoe Bay. The discovery and production of these undiscovered reserves depend primarily on whether drilling costs, production costs, and state and federal tax policies allow them to be brought to market.

TAXATION

■Alaska's production tax rate on producing oil fields was raised to 15 percent effective 7/1/81. New oil fields will be taxed at a lower rate (12½ percent) for their first 5 years. The Economic Limit Factor (ELF) no longer applies during the first 10 years of production unless it is .7 or less. The rate on gas remains at 10 percent with an ELF to eliminate production tax on production below economic levels.

■Alaska's petroleum industry pays 100 percent of the property taxes imposed by the state—an estimated \$140 million after credits for \$124 million of local taxes on the state assessed value of industry property.

■Alaska received an estimated \$1,422.4 million in oil and gas royalties in FY 1981.

■Motor fuel is taxed by the state at eight cents per gallon for highway use, five cents for watercraft use, four cents for aviation gasoline and 2½ cents of jet fuel.

■Alaska's petroleum industry paid the state approximately \$3,617,100,000 (\$3.6 Billion) in taxes, royalties and lease bonuses for FY 81 representing about 90 percent of the state's unrestricted revenues.

■Alaska's special oil and gas income tax was an estimated \$850.9 million for FY 1981.



Alaska Oil & Gas Association
Anchorage, Alaska

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Oil development's vital role in state economy

Fairbanks Daily News Miner, August 12, 1982

By MICHAEL ECONOMIDES

Repeatedly over the years, the issues of petroleum, its role in Alaska, and the diversification of the state economy have come to the limelight. Only recently the Fairbanks Daily News-Miner made a pitch for mineral development as a means of freeing Alaska, and the Interior in particular, from its dependence on oil, especially since Prudhoe Bay will "run dry" in a decade or so.

While the editorial did not necessarily touch on most of the issues that will be addressed in this article, it has skirted several. Other overtones, some clearly voiced, some sublime, have been with Alaskans for awhile.

Let's examine a few. There is a certain indescribable murkiness in the Alaskan perception of petroleum and its impact here. While few could readily spell out the numbers (96.7 percent of the state's coffers derived from oil revenues last year) all are aware of dividends and multibillion dollar projects. Yet this awareness is often cloaked with guilt, fear and uncertainty for the future (when the "wells run dry") and a psychological complex that other U.S. citizens may perceive Alaskans as "blue-eyed Arabs." Unspoken is the im-

age that Big Oil is not "true" Alaskan. Most people here are perplexed by dual sentiments toward an industry that supplies overwhelming benefits and yet its technological, financial and international dimensions escape them.

In the Interior in particular (amply justified by historical and before oil realities) minerals are perceived as "ours" while oil is "theirs." the pronoun referring to either outsiders or, heaven forbid, Anchorage.

I am not sure who benefits or loses from such arguments or lines of thought. They may, though, evolve into falsehoods: false perceptions (and hence unwise decisions) and false expectations (and hence major disappointments).

First, the idea that Prudhoe Bay will decline is indisputable. Most Alaskans suffer, though, from what Paul Norgaard, president of Arco Alaska, refers to as the "Prudhoe Syndrome." All new field discoveries or the future of the state are judged by the Prudhoe yardstick.

A case in point is the Kuparuk field, a giant reservoir that would generate immense enthusiasm anywhere else, but has left Alaskans largely unmoved. Few

state, yet it will have a tough time competing with Kansas, Iowa and Nebraska in becoming another bread basket of the nation until present price structures and supply and demand relationships, both domestic and international, may forgive such factors as transportation and production costs.

Mineral development is even more delicate and complicated. While the Alaskan miner has been, traditionally, a robust mainstay of Alaskan history and economy, mineral production of the size of today's petroleum output is another matter. Mineral industry executives have often stated that many large scale projects will not materialize just because this is Alaska or U.S.A. The economic attractiveness must be there. Foreign supplies, even with the present economic recession notwithstanding have steadily hurt the domestic industry. One may make a strong argument for strategic minerals and their relationship to national security (the same type of thought associated with the gas pipeline) but effective implementation would require strong measures of economic protectionism and exclusionary clauses. The Reagan administration does not seem to be inclined to do so. In a

potential mineral development, principals will be the multinational, multibillion dollar concerns (many of which are already owned by none other than the major petroleum companies).

As for Alaskans, the way with which they will reap the benefits of today and enter tomorrow fearlessly is by training and by developing an indigenous technological and managerial infrastructure to understand and manage intelligently its resources, industry and economy.

There is little foundation for the idea that the production depletion at Prudhoe will thrust the state into chaos derived from an overextended economy. Nor is there any earthly rationale for guilt because of Alaska's blessings. Finally, diversification will not be merely an issue to debate, but it will come naturally when and if the economics are attractive.

Michael Economides is an assistant professor of petroleum engineering at the University of Alaska-Fairbanks. He holds a doctorate degree in petroleum engineering from Stanford, and specializes in reservoir engineering.

Guest opinion

are consciously aware that Prudhoe Bay is a monstrosity, that it is the largest oil field ever discovered in North America and that much of Alaska's oil production will depend on more normal sized discoveries. These are estimated to be sizeable. Shell Oil Company, a member of the industry that many observers believe will become a powerhouse in Alaska, has released a study stating that with a reasonable leasing plan (and with the world economy permitting) Alaska could be producing 4.5 million barrels of oil per day by 1995, tripling the present production.

Such that Alaska's future may be, few would argue against diversification. Yet, forcing a particular type of development either by legislative fiat or by arising unfounded public fears and false expectations is not necessarily prudent, it is an affront to free market economics, and it can easily spell financial disasters.

Alaskan agriculture may become a force to be reckoned with within the

Oil revenues look gloomy as ever

By ANN CONY *AKC DAILY NEWS*
Daily News business reporter 1/10/83

With eight ministers of the 13-member Organization of Petroleum Exporting Countries (OPEC) threatening to cut oil prices, state petroleum experts are afraid their pessimistic revenue forecast of December may be right on target.

"I'd rather be able to say, 'Gee, prices have firmed up and things are looking good,' but I'm afraid that's not the case," Fred Boetsch, director of the state Division of Petroleum Revenues, said Monday.

OPEC has scheduled an emergency meeting for Sunday in Geneva. The organization will try again to set production quotas for individual members in what some observers are calling a last-ditch attempt to head off a full-scale price war.

After preparing its latest quarterly forecast, Boetsch's division predicted in late December that last year's \$3.1 billion in oil revenues would drop to \$2.8 billion for the current fiscal year and \$2.4 billion in the next fiscal year.

As a rule of thumb, state petroleum revenues drop by roughly \$150 million for every \$1-per-bar-

“We're looking at the Gulf price getting down to about \$26 a barrel . . . so we're about half-way there now.”

— Fred Boetsch

rel cut in oil prices. The latest revenue forecast was based on expectations that world oil prices would drop \$4 per barrel by this spring.

"We've already seen some of that cut take place," Boetsch said. After releasing the forecast, the oil revenue division learned that Sohio had cut the price of its Prudhoe Bay crude by \$1.75 to Gulf Coast markets and by \$1 to West Coast markets.

"We're looking at the Gulf price getting down to about \$26 a barrel (from \$30), and it's already being quoted on the spot market at \$28 a barrel. So we're about half-way there now," he said.

OPEC ministers had been hoping that a seasonal increase in demand would help hold oil prices up, but fuel oil consumption in many parts of the U.S. is far

below average because of mild weather in the first half of the winter, Boetsch said.

In addition, regular gasoline is selling for less than \$1 per gallon in some parts of the country, pressuring refiners to buy as little crude as possible unless prices fall, he said.

The meeting by OPEC ministers this weekend is an effort to succeed where they failed last month.

Boetsch predicted the key to the outcome of the emergency OPEC meeting will be Saudi Arabia, which he termed the "swing vote."

To hold the line on prices and accommodate dissident OPEC members that have increased their oil production, the Saudis would have to officially accept the lower production level they have unofficially adopted to maintain prices.

"They can make it work if they want to, but it would require sacrifice," Boetsch said.

The call for this Sunday's emergency meeting came on the heels of a meeting of eight OPEC oil ministers in Manama, Bahrain, where those ministers indicated they would unilaterally cut their oil prices unless the full group could reach agreement on apportioning oil sales.

Iraq reportedly decided last week to raise its daily oil production to 3.2 million barrels, which is 2 million barrels per day more than it was allotted last March.

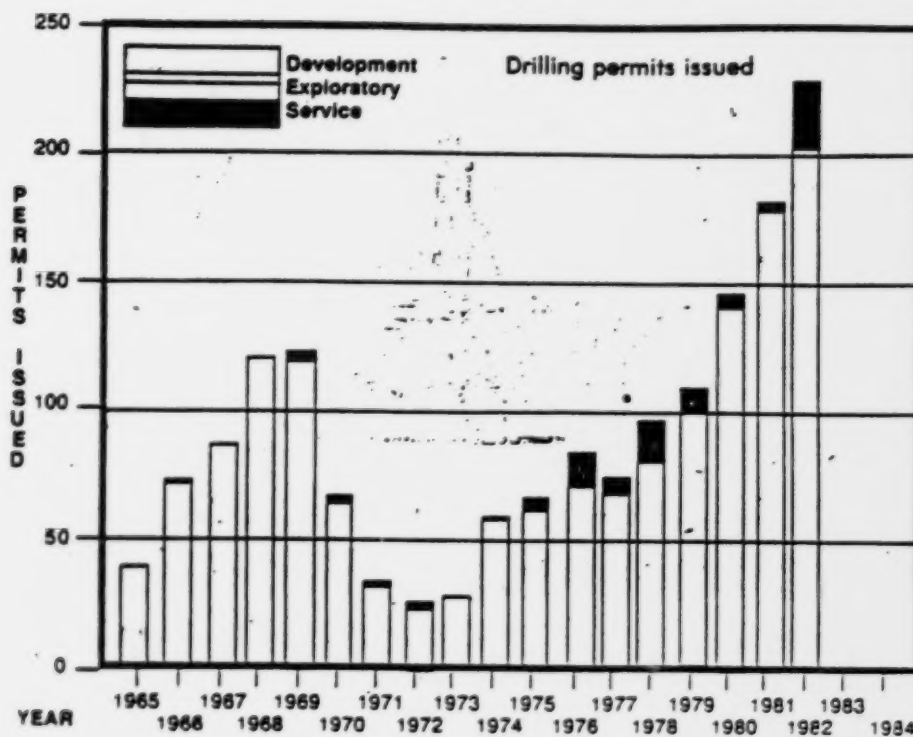
The U.S. government also stands to see revenues fall if world oil prices tumble.

Tax revenues would fall by nearly \$3 billion a year for each \$1 per barrel decline in oil prices, according to William Randol, an energy analyst at the investment firm of First Boston Corp.

According to the Associated Press, Randol and other analysts believe the Reagan administration would consider imposing an oil import fee to offset declines in taxes from domestic oil production should world oil prices drop significantly.

Chevron asks approval to drill exploratory well in Cook Inlet

ANCHORAGE NEWS 11/10/83



The Associated Press

Chevron USA is seeking federal permission to drill an exploratory oil well off Anchor Point in Lower Cook Inlet, and work could begin as early as April if the request is approved, a company spokesman said.

The tract where the well would be drilled is one of 13 which the company won in a 1981 federal lease sale. Four of the tracts are in Cook Inlet; the nine others are in the Shelikof Strait, north of Kodiak Island. Chevron paid \$4.7 million to obtain drilling rights on the parcels.

Company spokesman George Day said Chevron now is awaiting word from the Department of Interior Minerals Management Service on the company's permit application.

Day said the company has decided to postpone until later this year a series of exploratory wells in the Shelikof Strait. Chevron had planned to begin drilling there this spring.

If Chevron drills the Anchor Point well, it will be the tenth well started in Alaska's 1982-83 drilling season.

The number of permits issued by the state for drilling exploratory oil and gas wells dropped to 16 in 1982, compared to 18 in 1981 and 25 in the peak year of 1979. But an increase in permits for development and service wells — such as those to keep production flowing at Prudhoe Bay and Kuparuk — led to a 16.5 percent gain overall in drilling permits issued by the state last year.

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Reduced oil income means hard times for Alaska

By ERIC SUTCLIFFE

First of two parts **ANIL DAILY NEWS 1/20/85**

It is ironic that as the rest of the United States has apparently found a way to struggle out of the worst recession since the Depression of 1929, Alaska, which suffered through none of these recent hardships, may well be on the verge of entering a recession of its own.

Alaska's hard times will be caused by decreasing state oil revenues, which over the past few years have become the economic base for many sectors of our economy. While this economic downturn will not occur this year, it may begin to show itself by the spring of 1984, when, for the second year in a row, the state will appropriate 30 percent less than it currently does. In real terms, this means that there will be a billion of dollars less to spend on subsidizing housing loans, the construction industry and payrolls.

For many years, much of Alaska's economy has been fueled not by private sector dollars, but by state contracts or state shared revenues to cities and boroughs.

Anchorage could not have built Project 80s, the new schools, roads or water and sewer systems without the state's oil tax dollars. Anchorage builders could not have erected the thousands of new homes without the billion-plus dollars in state subsidies passed through Alaska Housing Finance Corporation. Alaska's general contractors would not have increased their membership by 100 percent over the last four years were it not for the state spending billions of dollars for docks, harbors and airports in communities all over Alaska. City, borough and state bureaucracies could not have increased their staffs by thousands in order to oversee and regulate this construction boom without oil tax dollars.



It will be absolutely impossible to have over \$1 billion taken out of circulation because of decreasing oil revenues without hurting many sectors of our economy. Alaskans will lose jobs, and most of these losses will occur in Anchorage where the majority those who are partially or entirely dependent upon state spending now live.

Who are these people — doing so well today, yet potentially out of work tomorrow? Will the jobs lost only be those that are regularly termed "Alaska's seasonally unemployed" that is to say those performed only in summer?

The Alaskans who are prospering today, and who will be out of work tomorrow, are the people who sell insurance to the contractor and his employees building convention centers financed with state oil tax dollars. They are people who work in the restaurants and clothing stores where customers pay for their meals and clothes with money earned on state-financed projects.

They are people who work for the city planning office where the permits are given out to the contractor building the convention center. They are people who work for the health corporation whose patients are the insurance and restaurant workers, and the contractor and his employees building the convention center.

They are all those business persons who answer phone calls from rural Alaskans who need parts flown out to complete docks and harbors financed with oil tax dollars. They are lawyers who negotiate contracts between the cities and the contractors building the con-

□ Eric Sutcliffe is a former Republican State Representative from Unalaska

vention centers, docks and harbors.

Business leaders and elected politicians have hinted that tough times are coming, but they have neglected to explain the hardships many people will have to bear. They have led people into believing that a decrease in state revenues will only mean an end to Project 80s or subsidized housing loans, all of which are nice things to have but certainly not among life's necessities.

What business leaders and politicians have not told people is that Project 80s, subsidized housing and massive construction projects have become absolute necessities of life — not because they are the essential providers of employment and cash flow for a large portion of Alaska's population.

According to any economic textbook, unemployment occurs when the primary base economy deteriorates. Since this may begin to happen in Alaska as early as next year, can business and political leaders do anything now to prevent it? Or is it possible that these people have already done enough by causing Alaska to become so dependent of government spending in the first place? These influential Alaskans will tell you there are some solutions — but they are at best temporary ones that will only make things worse in the long run.

Alaskans must be forewarned of these solutions so that when they are told by politicians and business leaders that these are the necessary, key ingredients for a continued healthy economy, they at least will have had time to reflect on the foolishness of it all.

STUDENT ACTIVITY SHEET

QUESTIONS TO ANSWER WHEN LESSON IS COMPLETE:

1. If approximately 90 percent of the Alaska general fund comes from oil revenues, what will happen to the state budget in ten and twenty years when Prudhoe Bay runs down?
2. What could be done to allow for a smooth transition if no more big oil discoveries are made?
3. How will the state support the many services that it now provides if there are no more big oil discoveries?
4. What changes would you anticipate occurring in your village if oil revenues substantially decreased?

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 4: Leasing Oil Tracts

Time: One class period.

Objectives:

1. Students will know where and when leases will take place in Bristol Bay.
2. Students will become aware of the steps involved in the leasing process.

Procedures:

1. Read text.
2. Project the set of overlays on leasing. This series of overlays outlines and briefly explains the what, where, and when of leasing.

Project: 1st overlay—"Present Leasing Schedule/Associated Pre-Leasing Activities"
2nd overlay—"Current OCS Planning Units in South Bering Sea"

Have the students differentiate the St. George and Northern Aleutian Basin. Notice that the St. George Basin lease sale occurred in April 1983. Measure the distance from the lease sale area to your village.

3. Project the 3rd overlay—"Proposed Oil & Gas Lease Sale 41: Bristol Bay Uplands."

Have the students determine where on the Alaska peninsula these lands are. Measure or estimate the distance between your village and the lease sale area.

We have looked at the general area in which a lease sale has or may be held. Now it is time to investigate what the benefits and impacts of actual oil exploration and development may be on Bristol Bay communities.

There are three large areas in Bristol Bay which are subject to oil leasing. One is state owned and the other two are owned by the federal government (U.S.A.). "Leasing" is when someone allows their land to be used by another person or corporation for a fee. The state and federal government have begun a leasing program in Bristol Bay. These leases include using both on-shore and off-shore areas for oil development.

OFF-SHORE FEDERAL LEASE SALES

St. George Basin (Lease Sale 70) was sold for \$427 million in April, 1983. This area was more than three miles off the coast, so it was in federal waters and, therefore, the Federal Government sold the lease to the companies.

A lawsuit was filed against this sale by False Pass and Nelson Lagoon villages, Friends of the Earth, Audubon Society and others.

North Aleutian Basin is scheduled for April, 1985. (Proposed Lease Sale 75.)

This was originally the North Aleutian Shelf, a smaller area, and was scheduled for 1983.

ON-SHORE LEASE SALES

Bristol Bay Uplands Sale 41 is proposed for September, 1984, by the State of Alaska. An analysis of effects should be available for public review by May, 1984. Specifically, it is the area between Port Heiden and Kvichak River on the Alaska Peninsula. (See overlay, "...Bristol Bay Uplands.") Here there is more potential for gas than oil. Twenty-six exploratory wells have been drilled under prior leasing agreements. No other areas of the Alaska Peninsula are on the five-year lease sale schedule. However, if there is an off-shore oil strike, more on-shore land south of Port Heiden may be proposed around 1990.

As the overlay, "...Bristol Bay Uplands," shows, much of Bristol Bay state-owned lands (tide lands, submerged lands, and uplands) can be considered for leasing to oil, gas and coal companies. Surface entry drilling is restricted only in the Bristol Bay Fisheries Reserve. This is from approximately Ugashik almost to Togiak in the three mile limit of state-owned waters. It also includes the lakes draining into this area: Iliamna, Becharof, and Wood-Tikchik.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 5: Oil and Gas: A Pro-Development View

Time: Two class periods.

Objectives:

1. The students will be able to critically review the videotape, "Oil: A Very Natural Resource."
2. The students will be able to determine if the villagers' concerns were answered by the videotape.
3. The students will be able to identify both positive and negative effects of oil and gas development.

Procedures:

1. Show the videotape, "Alaska's Offshore Oil: A Very Natural Resource," produced by Alaska Oil and Gas Association (AOGA), (30 min.). Roger Herrera is the primary narrator of this video which details how oil is drilled, recovered, and transported to market within the Alaska setting. Note: there is a double soundtrack on this tape, it can be played in either the English or Yup'ik mode by adjusting the audio dial on your VCR.
2. Have the students view the videotape with their personal questions and the questions of the village in mind. Have the students take notes on the videotape, especially with regard to answered and unanswered questions and new concerns and expectations. Have the students use the chart on the following page to list their comments.
3. Now, repeat the same format showing the videotape, "Oil and Gas in the Bering Sea," also produced by the AOGA (19 min.). These two videotapes highlight the industry's response to typical questions and concerns.

Villagers' Comments

Pro-development Response

Drawbacks of Development	
Benefits of Development	
New Questions	

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 6: Oil and Gas: An Opposing View

Time: Two to four class periods.

Objectives:

1. The students will be able to critically review two videotapes on oil and gas development.
2. The students will be able to identify impacts and concerns associated with oil and gas development in northern climates.
3. The students will be able to determine if their questions on oil and gas have been answered by the series of videotapes presented to them.

Procedure:

1. Use the same procedure as in the previous lesson and show "Katchemak Bay, A Question of Progress" and "Rope to our Roots." Have students take notes.

The first videotape explores the controversy surrounding the Katchemak Bay oil lease sale and the subsequent oil development activities. The question of change and its impact upon a village, the state, and future generations is examined. "Rope to Our Roots" provides a visual examination of the Inuit community of the circumpolar region. Highlights of the 2nd ICC Conference held in 1980 in Greenland are interspersed with a synopsis of various native problems originating from the reality of native people living within nation states, i.e., civil rights, economic subsistence, land claims, etc.

2. Have the students write out their unanswered questions. Let them know that through research they might begin to answer these questions.
3. Follow-up activity: Students can write to the following agencies to have their unanswered questions addressed. (Homework assignment.)

Alaska Oil and Gas Association
505 W. Northern Lights Blvd.
Anchorage, Alaska 99503

Bristol Bay Coastal Service Area Board
Bristol Bay Native Association
Dillingham, Alaska 99576

Department of Natural Resources
555 Cordova
Anchorage, Alaska 99501

Bureau of Land Management
701 "C" Street
Anchorage, Alaska 99501

University of Alaska
Petroleum Engineering
Fairbanks, Alaska 99701

OCS Off-shore Minerals Manager
800 "A" Street
Anchorage, Alaska 99501

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 7: Attitude Survey: Oil and Gas in the Bering Sea

Time: Two or three class periods.

Objectives:

1. The students will design and develop a brief attitude survey.
2. The students will collect information.
3. The students will organize and analyze the results.
4. The students will understand how attitude surveys are used to make an argument (i.e., AOGA's films as response to public comments).

Procedures:

1. Have the class express their attitudes regarding oil and gas developments, both positive and negative. From their thoughts you will construct a series of questions that will be used to elicit villager's concerns.
2. List all of the students' negative concerns on the board, along with all of their positive expectations, and then help them turn these concerns and expectations into questions. (The survey should be from five to ten questions long and be open-ended.) For example:

Concerns

The fish will be harmed.

Questions:

What do you think will happen to the fish if oil exploration occurs?

3. This lesson will take at least two class periods, one to develop the questionnaire and type it up, and the other to get the results of the questionnaire analyzed. The students should collect this information from their families after school.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 8: The Many Sides of the Controversy - Written Arguments

Time: One class period.

Objectives:

1. The students will be able to appreciate the complexity of the issues regarding oil and gas development.
2. The students will read a series of articles and find the major points in order to present an argument from the appropriate point of view.

Procedures:

1. Break the class up into groups. Each group represents an interest group: oil and gas industry, environmentalists, Western Alaskan villages, and the "State of Alaska."
2. Each group should try to make the strongest possible case for the role they are taking on.
3. Make sure that each interest group has a good idea of the position that it is taking. For example, the oil and gas industry stress technology and benefits to the nation as well as to local villages, the state stresses the importance of the fishery, many of the villages stress the importance of subsistence uses, and environmentalists stress the importance of the natural habitat.

NOTE: Niel Foley, who taught this course in Aleknagik, says that his class went through this lesson and the next one twice, allowing all of his students to play both sides of the issue.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 9: The Controversies Debated

Time: One class period.

Objectives:

1. The students will be able to represent their different interest groups in a debate.
2. The students will acquire public speaking skills.

Procedures:

1. Have each group present their view as strongly as possible in a formal debate format.
2. Each group should have approximately two to five minutes to present their view.
3. After each group has taken a turn, an open debate period should occur for another ten or fifteen minutes. Encourage follow-up points and assist the student if they are having trouble debating.
4. If the students have unanswered questions and an interest in following-up these questions, here are a few suggestions: write to other classes in Bristol Bay, (or to schools on the Lower Yukon and Kuskokwim) telling them of your concerns/questions/interests; write to AOGA; Bristol Bay Cooperative Management Planning Team; or Coastal Service Area Board. See addresses in Lesson 6.

OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 10: Impacts on the Marine Environment

Time: One class period.

Objectives:

1. The students will apply problem-solving skills to determine the major factors affecting potential oil spills in the Bering Sea, the St. George Basin, and the North Aleutian Shelf.
2. The students will be able to interpret a marine environment map.

Procedures:

1. Use the overlay, "Current OCS Planning Units South Bering Sea," and the maps of St. George Basin and/or North Aleutian Shelf Proposed Lease Sale Area. [The maps are available from the Bristol Bay Curriculum Project on a lending basis; contact the Project.]
2. Overlay the lease sale maps.
3. Note that Unmiak Pass is a critical point on the map, have the students determine "why."
4. Break the class into two groups, each one working with one of the marine environment maps. Each group should determine the major factors that would affect and be affected by an oil spill in the Bering Sea.
5. Some of the factors pictured on the map are: a) net circulation patterns; b) critical habitats; c) high concentrations of wildlife; d) summer and winter grounds, and e) wind direction. Make sure the students understand the meaning of the above factors.
6. Raise the following questions: How valuable are these resources? To whom are they valuable? In what ways are these resources different from oil? Explain the differences between renewable and non-renewable resources.
7. Have the class discuss the difference between the long-term value of the fishery vs. the short-term value of oil and gas discoveries and production. Note what the dollar value of the fishery is for 50 years, for 100 years, and so on vs. the value of oil and gas during these same time periods. Note that most oil fields run down in approximately 30 years.
8. You can begin to draw out one conclusion that two critically valuable resources may be in conflict. How might this conflict be dealt with?
9. Read "Oil Explorers Vow to Avoid Salmon Project," Anchorage Daily News, July 6, 1983.

Oil explorers vow to avoid salmon project

By ANN CONY
Daily News business reporter

An Interior Department official in Anchorage said Tuesday that operators of seismic ships in the southern reaches of Bristol Bay have agreed to steer clear of state salmon researchers.

Alaska Department of Fish and Game officials reported problems last week when compressed air blasts from a seismic vessel interfered with a department research project that is a key element in management of the Bristol Bay fishery.

"We just can't understand how anyone would pick the height of the (salmon) run for seismic testing," said Chuck Meacham, a Fish and Game regional research supervisor in King Salmon.

The state is conducting research from a gillnet boat that fishes from 30 to 80 miles off Port Moller on the north side of the Alaska Peninsula.

"What it does is give us an indication of the

number of salmon that will be coming back to Bristol Bay, the timing and the duration of the run," Meacham said. "That's very important to fishermen and processors who have to plan accordingly."

The information gathered off Port Moller also helps the Department of Fish and Game know when to open and close the bay to fishing, he said.

State researchers aboard the gillnetter reported significantly lower salmon catches when they heard the booms from a seismic ship a few miles away and concluded that the noise was driving the fish to deeper waters underneath their net, Meacham said.

Jerry Shearer, a supervisor in the resource evaluation office of Interior Department's Minerals Management Service, said he thought the problem had been solved Friday, when representatives in Western Geophysical Co.'s Anchorage office agreed to keep their two seismic vessels away from the state research vessel.

But a seismic vessel reappeared in the Port Moller area on Saturday, to the distress of Fish and Game officials.

Shearer said he checked permit records on Tuesday morning and found that a second company, Geophysical Services Inc., also was operating in that area.

Shearer said both companies now have agreed to stay at least 15 miles away from the state research boat until July 10, when most of the salmon should have passed Port Moller.

Geophysical Services and Western Geophysical are conducting seismic tests in preparation for the April 1985 sale of federal oil and gas drilling rights in the North Aleutian Basin, Shearer said. Both companies are working on a speculative basis, hoping to sell their results to oil companies interested in bidding for offshore exploration and production rights.

"I believe we have it under control now," Shearer said.

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OIL AND GAS DEVELOPMENT IN BRISTOL BAY AND THE BERING SEA

LESSON 11: On-shore Oil Development: A Study of Sensitive Areas

Time: One or two class periods.

Objectives:

1. Students will become aware of the areas that may be environmentally, socially, and culturally sensitive to on-shore oil development.
2. Students will review regulations concerning on-shore and gas development.

Procedures:

Part I

1. Project the overlay, "Proposed Oil & Gas Lease Sale 41: Bristol Bay Upland" onto the fish and wildlife maps of Bristol Bay that clearly indicate critical moose, caribou, fish, and other game resources/-habitats. (See the maps on p. 18 and p. 20 in Volume 1: Resource Inventory done by the BBCMP. This should be in your school library.) The intersection of oil tracts with critical game habitat will be clearly noted. Review the concept of critical habitat if necessary.
2. Start a class discussion by asking the students to say when the caribou, moose, and other game species are most sensitive in their life-cycle. When do these animals need the most space and least disturbance? Where are these animals physically located when they are most sensitive? Choose one area on the map to work with, preferably one which falls within the lease sale and is near your village. If your village is not within the lease sale area, choose one that is within the moderate to high potential area for oil and gas. Concentrating on this area:
 - a) Collect the specie sensitivity information from the students.
 - b) Color in or lay an acetate over the regional map to indicate the sensitive areas. Note different colors for calving areas, winter habitat, etc.
 - c) Ask elders where moose, caribou and other important game are most sensitive to disturbance. Place this information on the map overlays.
3. Identify the areas of overlap between critical habitats and possible oil lease sale areas. These areas need to be carefully examined before any development occurs.
4. Greg Peters, Director of the Bristol Bay Coastal Resource Service Area Board, discusses CRSA regulations concerning oil development. The transcript of this tape appears on the following page.

Part II

If on-shore oil development would occur in the middle of the uplands lease sale area, what impacts might occur to the surrounding villages? Ask the students the following questions:

1. What are the surrounding villages?
2. How can on-shore drilling affect village life?

Transcript for Greg Peters' Tape

My name is Greg Peters. I work for the Bristol Bay Coastal Resource Service Area Board. That's a group of local people from the region that are working on the rules for land and water use management. What we're going to talk about now is one of the rules that we've been playing with for oil, gas and mining. Basically, you'll talk maybe about some other rules about protecting the habitat and those are pretty important too. But these rules basically apply to oil, gas and mineral industries alone.

The first rule that we have reads as follows:

Encourage public and private land managers to grant access across land to oil, gas and mineral exploration and development firms that comply with this program. The purpose for this rule is to allow those firms that are going to follow all the rules, give them a chance. A lot of times what happens is you have mineral or oil and gas companies that have bought the rights to certain property, but then they can't get to it or get it out because it is surrounded by somebody who doesn't allow that. It's been a problem in Alaska and this rule addresses that. Of course, they've got to comply with the program and it's a pretty tough program. So, it doesn't mean everybody is going to be out there poking holes in everything.

The second rule:

The use of explosives will not be allowed if important fish and wildlife populations would be adversely impacted. Explosives are used in oil and gas exploration, in construction, in mining and, obviously, loud noises disrupt the animals, besides destroying where they live and the vegetation they eat. So, we're basically saying that you can't use it if it's going to really affect the fish and wildlife population.

The third rule reads:

Oil, gas and mineral exploration in development activities will be timed so as to minimize conflict with the fishing industry. This goes hand in hand with the board's view that the fishing industry is probably the most important thing in Bristol Bay and we want to keep it that way. And maybe you can have oil and gas, and maybe you can have mining, but it's going to have to fit in with fishing. You can't exclude it, but it can't harm the fishing industry.

OIL AND GAS DEVELOPMENT IN THE BRISTOL BAY AND THE BERING SEA

LESSON 12: Detecting Oil Related Damage to the Village Environment

Time: Two class periods.

Objectives:

1. Students will examine the effects of small oil spills on plant life.
2. Students will conduct an experiment, take notes, and form conclusions.

Procedures:

1. Take the class out to the bulk fuel storage tank in the village, if one exists. If not, go to a place where oil is stored and pumped on a regular basis. Measure off a 5x5 foot square, a 10x10 foot square, and a 20x20 foot square. Divide the class into three groups. Have each one estimate plant types, density and number of plants in each section.

Chart A Plant inventory near bulk fuel storage tank

Area	Plant Types	Total Number	Density*
5' x 5'			
10' x 10'			
20' x 20'			

*The formula for density is: Total Number divided by square footage of Area.

2. Now select another area that is used approximately as much as the bulk fuel storage area. Compare the amount of plant life there to the amount of plant life near the bulk storage facility. Follow the same procedure as above. Fill in the chart.

Chart B Plant inventory in heavily used areas

Area	Plant Types	Total Number	Density*
5' x 5'			
10' x 10'			
20' x 20'			

*The formula for density is Total Number divided by square footage of Area.

3. For Chart A, how does the data for the 5' x 5' square differ from the 10' x 10' square? From the 20' x 20' square? Do the same comparisons for Chart B. Can you draw any conclusions?
4. Now, compare the information you found in Chart A to Chart B. How do the "Plant Types" data compare? How about "Total Number" and "Density"? Can you draw any conclusions? What else did you find?

OIL AND GAS DEVELOPMENT IN THE BRISTOL BAY AND THE BERING SEA

LESSON 13: Values and Oil

Time: Two class periods.

Objective:

The students will appreciate how dependent they are on oil and oil-related products.

Procedures:

Part I

Use the following to conduct this values exercise.

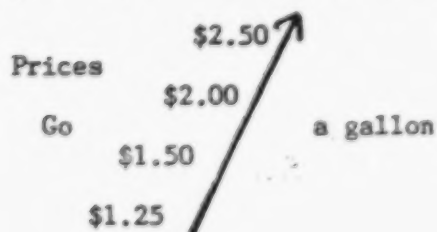
1. Let's assume that we are opposed to oil development in any new outer continental shelf areas that may affect fisheries. Therefore, when new fields are allowed, we support more and more restrictions and regulations to be placed on the oil industry. This "no-growth" to "slow-growth" approach to outer continental shelf oil exploration would protect the fishery. (Students will vote after hearing both sides.)
2. Consider a more liberal growth rate for oil discovery, drilling, and production. That is, off-shore exploration would occur on schedule in the Bering Sea.
3. Have the students vote and tabulate the results.

Slow	1	2	3	4	5	Fast
Growth	(secret ballot)					Growth

NOTE: We are assuming that most students will oppose liberal growth. This activity may not be as effective unless that assumption is accurate.

Part II

Let's assume that word has spread from Canada, Scotland, Netherlands, and other potential off-shore oil sites opposing off-shore development. The people have increasingly restricted oil production until the demand for oil becomes greater than the amount that can be supplied. Available oil goes down, the prices go up, and we have an oil shortage. In this scenario, oil is allotted on a "necessity basis." (In the reverse of this scenario, off-shore oil development has continued with little or no restrictions. The supply of oil may come to outstrip demand. Available oil goes up, the prices go down, and we have an oil glut.)



If our oil is to be allotted on a "necessity" basis, what would this mean for you? NOTE: Have students brainstorm consequences.

List Consequences (on blackboard)

Part III

Oil Shortages Increase

United States government, in cooperation with other nations, restricts personal consumption and community consumption. Ration cards are issued. The quota equals half of present use. What community items that need oil should receive priority? Break the class up into groups of three. Each group decides what community items should receive the oil. List from most important to least important.

- 1.
- 2.
- 3.
- 4.
- 5.

Share this information.

Part IV.

Each student must give up half of the items that they use that demand oil and/or gas. Have the students list what they would give up. Have the students share their results.

Part V.

There is a new round of public hearings on oil regulations. Have each group, or the class as a whole, discuss if they would ease up regulations on off-shore oil development. Is it a good idea? Why?

OIL AND GAS DEVELOPMENT IN THE BRISTOL BAY AND THE BERING SEA

LESSON 14: Oil Spill Simulation in the Marine Environment

Time: One class period.

Introduction:

This simulation involves an oil spill located in the St. George Basin during a critical time of year; approximately mid-May until the beginning of June. The students will be given:

- | | |
|--------------------------|---------------------|
| 1. Amount of oil spilled | 4. Wind direction |
| 2. Size | 5. Evaporation rate |
| 3. Date | 6. Location |

See "Chart A" following text material.

The student's task is to estimate the damage to the marine environment of an average-sized spill (approximately 10,000 barrels). The spill area will be near Izembek Lagoon, a particularly sensitive area for geese, and many forms of marine life. Follow-up activities include larger spills, different dates, etc. This is only a simulation. The oil companies have a good record regarding oil spills. Refer to AOGA's videotape "Oil and Sea," and other oil institute literature which document their record and effort. The data used in the exercise is as good as we can find on the factors affecting oil spills. Even so, this information is presented in a usable form to aid the students understanding of what may occur in the event of an oil spill. For a comprehensive but still incomplete account of oil spills, see the Bristol Bay Environment: A Background Study of Available Knowledge, Alaska Economic and Information Data Center (AEIDC), 1974, pp. 784-819 (Copies are available upon request from the Bristol Bay Curriculum Project.)

Objectives:

1. The students become familiar with "actual" risks involved in off-shore oil spills.
2. The students will have an understanding of trade-offs involved between oil and fish.

Procedures:

1. Using the simulation described: have the students predict how much oil will be left after one week (168 hours).
2. Students will calculate approximately how soon oil will reach the shoreline (use Chart B).
3. How much oil will get near Izembek Lagoon after 168 hours (use Chart B)?
4. Students will roughly predict types of damage to species. To do this they will need to know what species are in the area and which are most vulnerable to oil (see text). Then they can guesstimate the damage by using marine maps.
5. You can vary the simulation by simply changing wind direction, amount of spill, and time of year. Use an actual St. George Basin lease area for this.

Text:

Your teacher will present the Izembek Lagoon Oil situation. You will make calculations and estimates of the effects of a 10,000 bbl. (barrel) spill.

To assist you in determining damage to the marine environment due to oil spills, we have summarized the following information. Various plants, fish, and sea birds and mammals would be affected differently. For example, deep water fish and crabs would be generally immune to the effects of an oil spill, but their larvae would be very vulnerable. Salmon smolt would be more vulnerable than salmon adults; whales would be presumably less vulnerable. It seems that the species ability to avoid an area reduces their vulnerability. Also, life forms in their early stages are generally more vulnerable to oil than mature adults.

POLLUTANT DRIFT RATES DUE TO WIND UNDER SOUTHEAST
BERING SEA CONDITIONS 1/

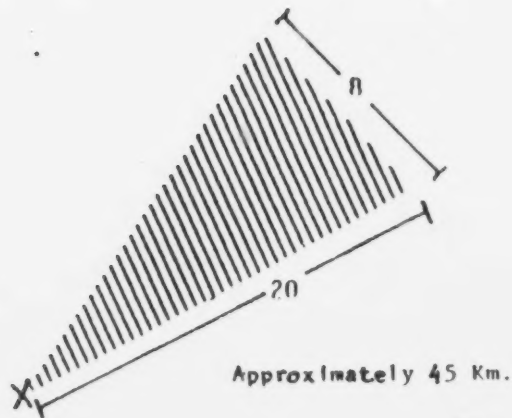
CHART B

WIND SPEED (knots)	SPILL SPEED <u>2/</u> (knots)	WIND DURATION (hours)	SPILL DRIFT	
			(nautical miles)	(kilometers)
10	0.25	12	3	5.5
		24	6	11
		48	12	22
		168 <u>3/</u>	42	77
20	0.5	12	6	11
		24	12	22
		48	24	44
		168	84	154
30	0.75	12	9	16
		24	18	33
		48	36	66
		168	126	233
40	1.0	12	12	41
		24	24	82
		48	48	164
		168	168	528
50	1.25	12	15	27
		24	60	110

- Notes: 1/ Indicates wind influence and not transport date due to other circulation factors.
- 2/ Spill speed assumed to be 2.5% wind speed. Spill direction-- would be roughly 15-30 degrees to the right of wind direction.
- 3/ One week equals 168 hours

Source: State of Alaska, Letter,
August 19, 1980 - Governor Hammond to
Wunnicke, BLM, Anchorage

Amak Island



Izembek Lagoon

7-day spill
Total 10,000 bbl (barrels)
Wind Direction: SE 20 Knot
Evaporation Rate: 20% /h
168 hour

Disperses: 15% will break
apart and rapidly disperse
away from the shore

BEST COPY AVAILABLE

UNIT VI: MINERALS AND MINING

OBJECTIVES:

1. The students will be aware of the potential mineral wealth of Bristol Bay.
2. The students will be able to identify the type and location of mineral deposits in Bristol Bay.
3. The students will be able to analyze the costs and benefits of mineral exploration and development in Bristol Bay.
4. The students will be aware of the kinds of mineral investments that village and regional corporations have made.
5. The students will be able to plan for resource development and note appropriate planning safeguards.
6. The students will participate in regional planning.

LESSONS:

1. Introduction to Bristol Bay Minerals.
2. The Mineral Kingdom.
3. Mineral Potential.
4. Land Status, Minerals, and You.
5. Environmental and Planning Considerations (a).
6. Environmental and Planning Considerations (b).
7. Platinum - Platinum, Alaska: A Case Study.
8. Public Participation.

Optional Activities.

MATERIALS LIST: Note: Items in brackets refer to either resources available in your school or resources that need to be requested in advance.

Lesson 1 - "Who Uses Metals? You, and You, and You," by Rose Rybachek.

Accompanying package of overlays.

Lesson 2 - (You will need to reserve through the State Film Library the film, "Mineral Kingdom," (LS84886CI) or another introductory film on minerals which is to be shown in Lesson 2 of this unit.)

Lesson 3 - Text.

Accompanying package of overlays.

"Study Gives Economic Prognosis for Alaska," by Roberta Graham.
Anchorage Daily News, June 19, 1983.

"Mining May Be Alaska's Next Major Growth Industry," by Mary Lou Couch. Anchorage Daily News, October 10, 1982.

Lesson 4 - Text.

"Land and Joint Ventures."

"Greens Creek Project," by Doug Smith.

"Bristol Bay Natives Report Record Profit," by Chuck Kleeschulte.
Anchorage Daily News, July 8, 1983.

Accompanying package of overlays.

Lesson 5 - Text.

[Videotape:* "Land and Resource Management, part 3" (50 min.)]

Lesson 6 - Text.

Accompanying package of overlays.

Lesson 7 - Text.

[Videotape:* "Platinum 1983." (13 min.)]

[Videotape:* "Platinum, Alaska: Early Days" (30 min.)]

[Audiotape:* "Robin Reynolds." (10 min.)]
Transcript of Robin Reynolds' audiotape.

Lesson 8 - Text.

[Audiotape:* "Greg Peters." (8 min.)]

Transcript of Greg Peters' audiotape.

Optional Activities - "Belt Creek Peat Project: Phase II." Bristol Bay Times, February 1, 1983.

*Copies of audiotapes and videotapes may be obtained by writing

College of Human and Rural Development
Resource Center
505 Gruening Building
University of Alaska-Fairbanks
Fairbanks, Alaska 99775

Blank audiotapes and VHS videotapes must accompany each request. Whenever possible, more than one program will be dubbed onto a tape.

MINERALS AND MINING

LESSON 1: Introduction to Bristol Bay Minerals

Time: One class period.

Objectives:

1. The students will be able to locate potential mineral deposits on a Bristol Bay map given specific place names.
2. The students will become familiar with minerals and their uses.
3. The students will understand the need for mineral development and for careful planning.

Procedures:

1. Bring in some mineral material: copper, aluminum, sand, etc.
2. Have students read text and newspaper article by Rose Rybachek, "Who Uses Metals? You, and You, and You."
3. Show minerals overlay map, (overlay "M" on the Bristol Bay Cooperative Management Plan overlay) pointing out the Ahklun Mountains. Mercury deposits are located near Lake Aleknagik.

MINERALS AND MINING

Wherever you were today, at school, home, on your snowgo or three-wheeler, or at the airport, you were involved with minerals. Although we hardly ever think about minerals, they are a common part of our lives. For example, the airport in your village is made usable by gravel; one of the commonly found minerals in Bristol Bay. Snowgos, cars and trucks all use iron ore (steel), copper wiring and sometimes platinum in their exhaust systems. In addition there also is the non-renewable fossil fuels (oil and gas) which drive our machines.

In fact, the book Minerals and Men states:

Today the mineral products of the earth are so commonly used that they affect every aspect of our lives, and today the average American is the largest consumer of minerals the world has ever known.... In 1970, per capita consumption of minerals in the United States (the average amount of material devoted directly or indirectly to each person) included nearly 1,400 pounds (620 kilograms) of aluminum—for containers, kitchenware, house siding, etc.; 20 pounds (9 kilograms) of copper—much of this used in the electrical industry; less than a pound (9.4 kilograms) of tin—one third of which went into tin cans; and a host of other less easily identifiable metals. (Alaska Geographic Oil and Gas Research)

Just think, the pop we drink is put in aluminum containers; the electricity that runs through our homes and schools is conducted through copper or aluminum wires; and some of our food is stored in tin cans. The conclusion is obvious: our present life style depends heavily upon minerals.

Most of the minerals we use come from all over the world. They are mined or extracted, refined, marketed and finally used. Since the world is always demanding more minerals, more minerals must be supplied. This is especially so since many minerals can only be used once. After they are used they are either not reusable (like the gasoline put in your tank) or they are fairly costly to reuse (like aluminum cans) making the supply of minerals decrease. This means there are increased pressures to find new mineral deposits.

Alaska is one state that has particularly rich mineral deposits. Just by looking at a map of Alaska you see place names such as Copper Center, Quartz Hill, Platinum, and Jade Mountain. In fact, the lure of gold, a valuable mineral, is responsible for some of Alaska's many boom periods, times when money was made fast and furiously, leading to population increases. Various parts of Alaska were settled due to the discovery of gold. Big discoveries in Nome (1900) and in Fairbanks (1902) led to major growth in those areas. To illustrate the importance of minerals to the world as a whole, gold has been used to support paper money. At one time gold gave paper money its value. This is called the gold standard.

In Bristol Bay, interest in exploring for and discovering mineral resources is increasing; though information on mineral potential, it's dollar value, and even it's exact location is not well known at the present time. There is enough information on potential mining activity, however, to suggest that future interest in Bristol Bay minerals may increase.

See the Bristol Bay Mineral Map on the following page and locate Chignik, the northeast corner of Iliamna Lake, the Ahklun Mountains, and Platinum-Goodnews Bay. Record on this map the most common mineral resource located in the Chignik area, the northeast corner of Iliamna, the Ahklun Mountains (those are near the Wood Tikchik State Park), and Platinum-Goodnews.

Metals

Only limited knowledge of the geology of the Bristol Bay area and general information regarding mineral deposits, ore types, lode deposits, etc., exists. As can be seen in the Bristol Bay Mineral Map, there are several areas having mineral potential. The mountainous portions of the Alaska Peninsula, especially those areas around the volcanos, have the potential for metallic minerals such as copper and molybdenum. Often associated with the terraces are small amounts of silver, gold, lead, or zinc. Most of the deposits are fairly low grade.

The mountainous areas south, east and north of Lake Iliamna, especially in the upper Mulchatna and Chilikadrotna River drainages, have many areas of known and suspected placer and lode deposits of gold, silver, tin, copper, tungsten, molybdenum, lead and iron.

The third area of mineral potential is the Goodnews Bay region which has been the site of numerous small scale placer operations for gold, platinum, and chromium. Another area with little development but some unknown mineral potential for copper, silver, gold, platinum and chromium is the mountainous area northwest of Wood-Tikchik State Park.

It is important to note that other areas may have mineral potential, but the information needed for determining potential is lacking.

Coal

There are two major coal fields in the Bristol Bay area, one near Chignik and the second at Herendeen Bay. The Chignik field with an estimated resource of 300 million tons, consists of high volatile lituminous coal in impure beds ranging in thickness from 0.3 to 1.5 meters. The beds are moderately folded and faulted but little is known about the quality and full extent of the field which may extend offshore. There are currently some small underground mines in operation.

The Herendeen Bay field is estimated at somewhat less than 300 million tons of lituminous coal but the full extent of the field is unknown. In the southern section of the field, the coal is primarily of a lignious nature. The beds in this field are up to 2.1 meters thick and moderately folded and faulted. There are some small surface mines currently in operation.

Under each of the minerals that you found and listed on the Bristol Bay Minerals Map, list typical uses of that resource:

- | | |
|--------------|----------|
| I. Coal | IV. Gold |
| II. Platinum | V. |
| III. Copper | VI. |

Why is interest increasing in minerals?

Bristol Bay is being intensively studied because of a federal law, the Alaska Natural Interest Lands Act (ANILCA) which calls for a cooperative study and management of the land. This effort is spearheaded by the Bristol Bay Cooperative Management Plan and the Coastal Service Area Board, which are both determining guidelines on how the land should and should not be used. These decisions are very important to the Bristol Bay Native Corporation, village corporations, the people of Bristol Bay, miners, industry, environmentalists, and the state and federal government. What is decided can determine how the land can and cannot be used for mineral development. The plans may close areas or restrict activity in certain areas. For example, mineral exploration and development will be restricted in stream beds to protect the fishery. Greg Peters, the director of the Coastal Service Area Board, said that there is general agreement on this restriction. Meanwhile interested parties such as miners and the mineral industry are trying to have rules that accommodate their needs. The Bristol Bay Cooperative Management Plan states as a goal for mineral development: "maintain opportunities to develop the region's mineral resources." But at the same time it offers a guideline "to avoid adverse (negative) impact on fish or fish habitat" (p. 20, BBCMP, DEIS). Depending on future developments conflicts may arise between mineral development and the protection of fish and game. This is one critical area that you will need to follow during the course of the next few years.

Who uses metals? You, and you, and you.

Fairbanks Daily News Miner, July 26, 1983

It should come as no surprise to anyone connected with the mining industry to reflect that any individual in an industrialized society will have "used" a dozen different metals before breakfast.

Bed springs, for a start, normally contain iron, manganese, chromium and vanadium. The simple action of switching on an electric light involves a whole system of metals: the tungsten lamp filament, copper wiring, copper, mercury and zinc in the switch, tin and lead in the solder and fuses. In the distribution grid, there may be aluminum in the power lines and uranium in the generating stations. Turning on the water for a wash involves several metals yet again, and a look in the mirror "silvered" with tin-mercury amalgam brings the list to 12.

As the day passes, so the list in which metals are essential grows: Farm tractors and equipment, boats,

autos, trucks, trains, airplanes, food-stuffs and even you! It is possible to calculate the value of the human body by the trace elements it contains. Yet the odds are that if someone is asked who uses metals, he'll answer by listing shipbuilders, blacksmiths, plumbers or the like—but rarely himself. People simply tend not to identify themselves as being the users and, thus, the ultimate consumers, of metals. They read about the consumption of resources and express opinions on the subject without thinking of themselves as being in any way responsible. Nevertheless, it is the sum total of the demands of ordinary individuals which creates the world markets for metals.

These unaware consumers of the products of the mining industry are the voters who elect governments. Mining and minerals policies do not play a noticeable role at election times. Other issues are of more im-

**Rose
Rybachek**



Views expressed here do not necessarily represent those of the Daily News-Miner

mediate concern. Voters are more concerned with the cost of bread than the price of lead. The people they elect to govern draw up the legislation which controls—and often restricts—those whose business it is to win and process the raw materials for industry. The legislators work without any clear direction from their electors or—and perchance worse—under the undue influence of vociferous pressure groups.

The members of the environmentalist lobby are themselves users of metals. However strong their "back to nature" call, there are few who have reverted to Stone Age living standards implied by the reality of their pleas. The very books written complaining of mining activities have been typed and printed with the use of many metals.

Advocates of recycling have a point. Man needs to conserve the resources available as much as possible for the benefit of posterity. But in a climate of rising demand—caused in part by population increase and the aspirations of the poor to better conditions—there is no way that scrap and secondary metal can meet more than a fraction of requirements. Lead in batteries is easy to return, but tungsten in lamp filaments is another story. Recycling is an ideal which does not add up.

The preservationist environmen-

talist lobby has great public sympathy and rightly so. The mining companies, which are providing an essential need, have not. Who cares that the road system takes up more land surface than mining does? How often are fingers pointed at industry with its workshops, or the distributive trades with their warehouses and supermarkets? A supermarket which is seen as fulfilling a need instantly is welcomed by the public in a way that an openpit mine never is.

There will always be objectors to primary mineral extraction, whatever the proposed development. But we must consider the industry's role in society. We must develop our resources in an orderly fashion. Remember, it is you and I who create the demand for metals.

Rybachek welcomes questions and comments. Readers may write to her care of the Daily News-Miner, P.O. Box 710, Fairbanks, AK 99707.

MINERALS AND MINING

LESSON 2: The Mineral Kingdom

Time: One class period.

Objectives:

1. The students will become familiar with a mineral classification system.
2. The students will become familiar with a variety of minerals and their uses.

Procedures:

1. View the film, "Mineral Kingdom."
2. Ask students to list minerals found at home.
3. Ask students to bring items made with minerals.

Materials:

Film, "Mineral Kingdom," State Film Library, (LS84886CI)

(Note: You may want to substitute another introductory film on minerals, as this one is not of highest quality.)

MINERALS AND MINING

LESSON 3: Mineral Potential

Time: One class period.

Objectives:

1. The students will learn about economic considerations that may make mineral development in Bristol Bay expensive.
2. The students will learn the dollar value of various minerals.
3. The students will learn about the economic potential of mineral development to the state of Alaska.
4. The students will be able to interpret bar graphs.

Procedures:

1. Have students read the enclosed text.
2. Project the overlay, "Mineral Price Trends of Selected Strategic Minerals." Point out the high value of many minerals and how dramatically prices fluctuate.
3. Make the point that fluctuating prices change the value of minerals in the ground and hence business possibilities.
4. Have students read two newspaper articles—"Study gives economic prognosis for Alaska," by Roberta Graham (Anchorage Daily News, June 19, 1983) and "Mining may be Alaska's next major growth industry," by Mary Lou Couch (Anchorage Daily News, October 10, 1982).
5. Project the overlay, "Significant Mineral Deposits and Prospects in Alaska."
6. Have the students answer the following questions:
 - a. According to the "Delphi" study, in what year will mineral development become Alaska's largest industry?
 - b. What part of the state has the largest concentration of minerals?
 - c. What will miners or village/regional corporations need to do to get minerals to market?
 - d. What are the two highest priced minerals found in Bristol Bay?

OVERVIEW OF MINERAL POTENTIAL

Although the earth's crust contains vast amounts of mineral resources, this does not mean that it is economically worthwhile to extract minerals from Bristol Bay. What things do you think would be necessary for mineral extraction to be profitable? For one, the developer would need to find the mineral in a large concentration, making it easier to get the minerals out of the earth in a less costly fashion. The developer would be looking for the purest sample of highest concentration of a mineral in a particular area. Also, the developer would need access to the area and a transportation system to get in and out with the minerals, including roads, port facilities, airstrips, rivers, etc.

The Bristol Bay Cooperative Management Plan has come up with a brief summary statement about minerals in Bristol Bay:

Development of other minerals in the region is currently hampered by lack of information. Coal deposits exist that may prove commercially viable. Some platinum and gold mining occurs in the region, and further high-value hard rock minerals may yet be discovered. Sand and gravel deposits play a disproportionate role in the region's development because of the vast wetlands that must be crossed in virtually any transportation or development scheme. To develop any mineral resources will require constructing roads and port facilities. Traditional problems of scarred landscapes, acid drainage, and siltation of streams flag environmental concerns.

Although the above statement contains little specific information, use it to name three potential changes that may occur in Bristol Bay if mineral development is to take place.

- 1.
- 2.
- 3.

Value of Minerals

As mentioned earlier, for minerals in Bristol Bay to be marketable they need to be near existing transportation systems or near where they will be used. Gravel is found throughout Bristol Bay, and it can be used for road and airport construction as well as for housing foundations. Jack Moores, an engineering geologist for the Bristol Bay Native Corporation, thinks that gravel is the essential mineral to be found in Bristol Bay.

Other minerals such as gold and platinum are very valuable, worth over \$400 an ounce. Because these minerals are so valuable it is more likely that they could be extracted for a profit if they are found in high concentrations. In fact, the Platinum Mine is one of the largest producers of platinum in Alaska and in the United States. See the "Mineral Price Trends..." overlay which states the value of many minerals.

Mining may be Alaska's next major growth industry

Anchorage Daily News

Sunday, October 10, 1982

The next major industry to develop in Alaska will be mining, the markets and the bankers willing. The pattern of Alaska mineral development, however will be somewhat different than in most other states for at least three reasons.

First, Alaska is at one both the largest and the smallest state in the Union. At one-fifth the size of the rest of the United States, Alaska spans four time zones and has two-thirds of the entire U.S. Outer Continental Shelf. Additionally, more than one-third of Alaska is a National Park or other type of conservation unit. Alaska's huge area, however, has fewer people than any other state. In fact, Alaska's entire population is about the size of the city of Albuquerque. These factors combine with Alaska's remote location, harsh climate and adverse terrain to make doing business here an expensive proposition for mining companies.

In addition to our unique geography and demography, Alaska has virtually no infrastructure. For example, Alaska has only about 9,900 miles of paved roads, or a mere fraction of the 568,000 square-mile surface. This lack of transportation systems, power sources and similar facilities commonly accessible in other mining areas also contributes significantly to the cost of doing business in Alaska. Consequently major Alaska mining operations are likely to require huge amounts of capital from several sources.

mary lou couch



A third factor which separates Alaska from many other typical mining states is the huge potential resource base. For example, one of the world's largest molybdenum deposits is under development by U.S. Borax in the Misty Fiords National Monument, about 40 miles from Ketchikan. Borax expects to invest about \$850 million in the project. The world-class Red Dog lead/zinc/silver deposit is planned for further production by NANA/Cominco about 120 miles north of the Arctic Circle and 60 miles from tidewater. Estimates say the project will cost \$500 million to bring into production. The Greens Creek just venture base metals project located within the Admiralty Island National Monument anticipates about \$100 million in capital costs.

Miners also think Alaska has world-class deposits of asbestos, copper and coal. Although the Alaska coal resource estimates from 1.5 trillion tons to five trillion tons, the Usibelli mine at Healy is the only operating coal mine at the present time.

Other promising coal deposits, using the hypothetical resources, include the 27-billion ton Beluga field across Cook Inlet from Anchorage where the Diamond Shamrock group and Placer Amex are investigating developments; the 24 billion-ton Kenai field; the 149-million-ton Matanuska Valley field; and an estimated 1.7 trillion tons north of the Brooks Range.

Today, the actual Alaska mining industry is small with a \$180 million value of production, about one-half of which comes from sand and gravel. The industry provides about 2,000 to 3,000 jobs with more than 30 firms thought to be spending about \$15 million each on exploration. In the future, however; the Alaska Miners Association has determined that a major Alaska mining industry could develop over the next decade or to provide 6,000 new jobs and \$3 billion annually in wages and purchases.

Key questions in the future will revolve around the State of Alaska's ability and suitability for financing certain infrastructure projects to encourage mineral development. But now that Alaska land status is finally determined, enabling major mining companies to undertake extensive reconnaissance, the window of potential is open wider than it has been for several years.

Study gives economic prognosis for Alaska

By ROBERTA GRAHAM
Daily News business reporter

The economic future of Alaska has been a hot topic of conversation in political circles and among business people for years. The future structure and size of the economy, its boom-to-bust cycles, which industries will grow and which industries are yet to be born are all subjects of intense speculation.

The views of 91 Alaskans — including former governors, legislators, educators and business owners — on how the future will unfold was released last week in a report state planners call the Delphi Study.

Their predictions, collected over a seven-month period through three lengthy questionnaires, forecast what Alaska's economy will be like 50 years from now. And their opinions will help shape the long-range plans of state government.

The conclusions are varied. They look ahead at the economy, what rural Alaska might be like, what Native corporations will mean to the state and which key projects might be operating by the turn of the century.

The \$101,000 study was prepared for the Department of Commerce and Economic Development by researchers with Alaska Pacific University.

Commissioner of Commerce and Economic Development Dick Lyon has called the ten chapters an awesome collection of opinion that will be used to help formulate state policy for years to come.

He said one of the most telling conclusions is that state spending will continue to have the biggest impact on economic growth and development.

Panelists said state spending now accounts for 37 percent of Alaska development, while the federal government has a 35-percent share, and the private sector trails at 28 percent.

However, that's not how it should be, most panelists agreed. Over the next 20 years they would like to see the private sector account for 52 percent of development costs, with 48 percent coming from state and federal spending.

But, at the same time, most respondents acknowledged what should be and what will be are quite different. In reality, they said, the state will continue to play the major role in economic development with a 35-percent

contribution, while the private sector will play an increased part at 34 percent and the federal government a 29-percent part.

Petroleum resources, they said, will remain the predominant driving force in the state economy during the next 20 years, and that state-supported construction projects will be used to create employment throughout the state.

Other state actions that will have a major impact on economic development include:

- Expanding the transportation infrastructure — roads, highways, ports and airports;
- Providing stable and inexpensive power;
- Increasing investment and financial incentives for business;
- Reducing regulatory restrictions;
- Making land available for private development; and
- Reducing subsidies to selected industries.

Fisheries will continue to receive the strongest state support, followed by the oil and gas industry, tourism and coal development.

The economy will prosper from state and private development, the study said, growing from \$10.8 billion in 1979 to \$20 billion by the year 2000.

"Raw material availability, Pacific Rim relationships, energy availability, state loan programs and the quality of life are among the most positive aspects of the Alaska business climate," panelists agreed.

"Environmental regulations, Alaska market size and characteristics, labor unions and the permit process requirements are among the most negative."

Japan, Korea and other Asian countries will be the main market for most of Alaska's natural resources — oil, natural gas, timber, seafood and coal.

But external developments can't be ignored, panelists said. Oil prices will rise substantially above current levels, causing the U.S. to strive for a policy of energy independence. Congress most likely will impose a tax

on resource producing states but will not significantly relax environmental regulations.

Several of the major technological developments cited in the survey that could have a big impact on the state economy include computer use, the commercial development of tidal power and an aquaculture industry. The study also said improvements in the transportation industry such as ice breakers, undersea transportation and roll-on, roll-off barges could have a significant impact here.

Wages, they predicted, will remain high and the population will grow.

Most industry officials declined to offer an opinion until they see the study.

But Bob Richards, vice president of Alaska Pacific Bancorporation and one of the Delphi panelists labeled it a collection of best guesses made by people who should know.

"It is nothing more than what it intends to be and that is the collective opinions of the participants. If one agrees with collective opinion of the participants that's fine. If they don't, that's fine too," he said.

"But it's more valid than just a survey for two reasons. No. 1, those people probably have more knowledge of the economy and of state policies than do most. And No. 2, the Delphi method consists of a constant feedback mechanism of the questions.

"I think it's (the study) very valid. But we won't know until we get there," he said.

Other Delphi panelists included former Gov. Jay Hammond; North Slope Borough Mayor Eugene Brower; Dr. Max Brewer, chief of operations at the National Petroleum Reserve; Sitka Mayor John Dapcevich; H. Nobel Dick, president of the Bristol Bay Native Corporation; Paula Easley, executive director of the Resource Development Council; Tom Fink; state Rep. Walt Furnance; Seward City Manager Ron Garzini; Dr. Richard Ender, professor of business at the University of Alaska, Anchorage; George Krusz, president of the state Chamber of Commerce; Mark Lewis, state Commissioner of Community and Regional Affairs; Byron Mallot, chairman of Sealaska Corp.; former state senator Dick Randolph; state Sen. Bill Ray; Ilene Sackett, former chairwoman of the Alaska Women's Political Caucus; former lieutenant governor Lowell Thomas Jr.; economist Arlon Tussing; Joe Usibelli, president of Usibelli Coal Mine, Inc.; and Congressman Don Young.

MINERALS AND MINING

LESSON 4: Land Status, Minerals, and You

Time: One class period.

Objectives:

1. The students will determine which BBNC Lands have mineral potential.
2. The students will learn about current BBNC mineral interests.
3. The students will be able to state questions concerning mineral development.

Procedures:

1. Have the students read the enclosed materials.
2. Use an overhead and display the land status and minerals potential map overlays. (Overlays: "Bristol Bay Cooperative Management Plan" in conjunction with "M" and "L" (Native Owned and Selected).
3. Optional activity: write to BBNC and ask them about their mineral projects.

Text:

At this point, you may still be wondering "how does this involve me directly?" Well, it does. In fact, you may be an owner of mineral wealth already. You say "no." But wait. Are you a member of the Bristol Bay Native Corporation? Are you a member of a village corporation? The answer to these questions may well be "yes." If not, we are all residents of Bristol Bay and any major changes affects all of us.

Under the Alaska Native Claims Settlement Act, the village and regional Native corporations have selected lands. Do these lands hold mineral potential? Is the potential significant enough for mineral exploration and development to take place? What would be the effect of such development? These are a few of the questions that need to be asked before any planning or decision-making can take place. What other considerations do you need to think of in order to make a decision concerning mineral development?

Remember, ANCSA gave sub-surface land rights to the Native Regional Corporation, BBNC. See the land status map which your teacher has projected on the wall. The minerals map is projected over it. Look for areas of overlap between "Native owned and selected" lands and areas of mineral potential: these overlaps indicate places where BBNC may consider mineral development.

Bristol Bay Native Corporation: Mineral Potential and Development

Have you ever looked at the Bristol Bay Native Corporation's Annual Report? Like many of us you may not pay attention to these items. Yet they contain valuable information. BBNC's decisions are your decisions. What have they decided about mineral exploration and/or development? Enclosed are some pages from their 1982 annual report, which outline BBNC's mineral activities. Also enclosed is a photocopy from Alaska Geographic Oil/Gas and Minerals which is concerned with BBNC's involvement in mineral development.

Here are some questions to think about before you read these articles and then to answer.

1. Where is BBNC involved with mineral exploration?
2. What type of mineral exploration are they involved in?
3. Are they involved in any exploration in Bristol Bay?
4. If so, what?
5. What questions would you have about mineral development for a BBNC representative.

LAND AND JOINT VENTURES

The Land

During the fiscal year ending March 31, 1982, the Bureau of Land Management interimly conveyed and/or patented approximately 153,986 acres of surface estate to the villages within the Region. All the subsurface rights to this land have been conveyed to the Bristol Bay Native Corporation. The total surface estate that has been conveyed or patented to the village is approximately 2,681,920 acres.

In addition, Bristol Bay Native Corporation received interim conveyance to both the surface and subsurface estate to 56,168 acres under Section 14(h) (8). The Bureau of Land Management has conveyed 2,738,088 acres of subsurface estate under Sections 12(a), 12(b) and 14(h) (8). Another 15,933 acres of Section 14(h) (8) land should be conveyed by December 31, 1982.

Bristol Bay Cooperative Management Plan

The Alaska National Interest Lands Conservation Act (ANILCA) mandates the preparation of a comprehensive and systematic cooperative management plan for the Bristol Bay Region, to be prepared jointly by the State of Alaska and the U.S. Government. National Park lands are not included in the study area. Native lands are included, but originally, Native interests were not represented in any way. After a great deal of effort by BBNC, we were successful in getting a Native representative on the study group, the planning coordinating committee and the six working groups. Working groups are Fish and Wildlife, Land Exchanges, Transportation, Hydropower, Minerals and Oil and Gas.

The planning coordinating committee and working groups will submit their recommendations by December for inclusion in a draft land management plan. After public hearings and final changes, the plan will be sent to the Governor and the Secretary of the Interior by December 1983. BBNC has retained a consulting firm whose representative works closely with our staff in order to have our maximum input in all stages of the planning process.

The Alaska Land Use Council is entirely separate, although they are working on overall land problems. AFN has two representatives on that council. BBNC is also represented on the land Managers Association of AFN.

Amoco Production Company

Amoco Production Company conducted extensive geophysical work in the region during the year and plans additional work this season.

LAND AND JOINT VENTURES

Resources Associates of Alaska

Resource Associates of Alaska and BEAC have extended their agreement for an additional five-year period. Last season, Resource Associates conducted an extended coal evaluation survey, including core drilling in the Chignik area as well as geological work on other mineral prospects. This season's program will involve further evaluation of prospects in the Kokhanok, Chignik Lagoon and Ivanof Bay areas.

Green's Creek Joint Venture

The Green's Creek Joint Venture, operated by Noranda Mining, Inc., reopened the adit in order to obtain bulk samples of ore for metallurgical testing. In addition, drilling continued at proposed tailings impoundment sites. Environment and engineering studies on various components of the project continued, including work on the Draft Environment Impact Statement (DEIS) by the U.S. Forest Service Interdisciplinary Team. It is anticipated the EIS will be available for public review by mid July with a final decision by November. In addition, more exploration work on the unpatented Green's Creek claims will be conducted, as well as work on mine/mill locations, tailing impoundment sites, docking facilities and road design. Major decisions will be made late in the year or early next year.

Bristol Resources, Inc., a wholly owned subsidiary, owns 11.2 percent of Green's Creek Joint Venture.

Norbritex Joint Venture

In January 1981, Bristol Resources, Inc., joined Noranda Exploration, Inc. and Texas Gas Exploration Corporation to form NORBRITEX Joint Venture. The mineral exploration program is in the greater Juneau area. Noranda Exploration is the operator and BRI owns 24.5 percent interest.

Geological studies were conducted on several prospects, and claims were staked on those with the greatest potential. In addition, some older existing properties were optioned and evaluated. This season's work will be to further evaluate existing claims and stake additional claims on selected target areas.

Alaska United Drilling, Inc.

In September, Bristol Resources, Inc. purchased 20 percent stock interest in Alaska United Drilling, Inc. (AUDI). Other Regional Corporations presently owning stock are NANA and Sealaska, and the remaining regions have been invited to join. VECO International owns the remainder of the stock.

AUDI operated three large drilling rigs. It owns 95 percent of Rig No. 1, presently drilling in Oklahoma for Tenneco. Vanguard Industries (VECO-NANA) and two North Slope villages own Rigs No. 2 and No. 3, presently drilling on the North Slope for Schio.

Greens Creek Project

By Doug Smith

Flying north over Chatham Strait and looking east up Greens Creek near Hawk Point on Admiralty Island, a small clearing may be seen on the hillside. This is the exploration for the Greens Creek Project, which is about 18 miles southwest of Juneau.

The joint venture that discovered the deposit (see *Prospecting Alaska*, page 88) was formed in early 1973 by Noranda Exploration, Marietta Resources International, Exalas Resources Corporation, and Texas Gas Exploration. Its success led to the formation, in 1978, of the Greens Creek Joint Venture for the continued development of the project. Bristol Bay Native Corporation, which owns land on Hawk Inlet near the mouth of Greens Creek, has joined with the other four companies in the venture. Thus far, development of the project has included claim-staking, metallurgical test work, geophysical surveying, excavation of a 4,200-foot adit (a tunnel with one

opening), 48,000 feet of diamond core drilling, and environmental studies.

In 1981 field workers conducted seismic surveys and shallow diamond drilling to further evaluate proposed tailings disposal sites and excavated a cross-cut tunnel from the existing adit to the mineral deposit. Ore samples were obtained and sent to a laboratory for detailed metallurgical testing.

So far, helicopters have supported all exploration and pre-development activity at Greens Creek. Minor surface disturbance has been limited to the preparation of drill sites and the clearing of a campsite and waste rock disposal area. During 1981, Noranda Exploration's management role was transferred to Noranda Mining Inc., as the project moved through conceptual engineering toward actual mining. Noranda Mining Inc., with headquarters in Salt Lake City, Utah, is the United States subsidiary of the parent company, Noranda Mines Limited, of Canada.

Initial clues of mineral values were found in stream sediments at the mouth of Greens Creek. Upstream exploration located the source of mineralization and the outcrop of the ore zone known as the

Big Sore because of the reddish-stained, natural ground seepage where little vegetation grows. Initial surface drilling at Big Sore indicated several horizons containing variable-grade silver, zinc, lead, copper, and gold ore. Continued drilling has now delineated a narrow, steeply dipping ore zone extending horizontally at least 3,500 feet. Diamond drill core intercepts have indicated geologic reserves above the 1,100-foot elevation, estimated at three million tons containing 0.5% copper, 2.5% lead, 7% to 10% zinc, 10 plus ounces of silver per ton, and gold at 0.1 ounce per ton. Geologists have not yet determined the final limits of the orebody.

The steeply dipping, narrow zone requires an underground mining method called cut and fill. Ore is removed, and waste rock, some tailings, and cement replaces the volume of mined-out ore. Production will be about 800 tons of ore per day, and full production is not expected before 1986 at the earliest.

Clue to the Greens Creek mineral find was the Big Sore, a reddish-stained scar on a hillside where little vegetation grew. (Doug Smith)

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Editor's note: Doug Smith is former public relations coordinator for Noranda Mining Inc., managing company for the Greens Creek Project.

Bristol Bay Natives report record profit

By CHUCK KLEESCHULTE
Daily News business reporter

The shareholders of the Bristol Bay Native Regional Corp. Thursday received the best news ever from their corporation, which reported a solid and record profit during the past year.

The corporation, in its annual report, said it recorded an after-tax profit of \$3.4 million. More importantly, the company recorded operating earnings of \$2.3 million — 300 percent more than in fiscal 1982.

Hjalmar Olson, chairman of the corporation's board of directors, said the operating profit, the second in two years, was the most encouraging news, since it proved the corporation has assembled a group of businesses capable of generating sustained profits for the corporation's shareholders.

"The report is so encouraging since we had a good year, but a stable year," said Elizabeth Johnston, general counsel for the Native corporation. "We made our money from sustainable sources not one-time events," she said Thursday.

H. Noble Dick, president and the chief executive officer of the corporation that serves Natives living in southwestern Alaska, said the increased earnings were caused by improved sales, contin-



Hjalmar Olson

ued cost control measures and the settlement among the 13 Native regional corporations of a lawsuit concerning the Alaska Native Claims Settlement Act.

Last year all the corporations agreed to settle a complex and expensive suit that had been going on for years over how to split revenues among the corporations gained from subsurface mineral rights. Settlement of the suit removed a continuing drain on the corporation's finances, Dick said.

Bristol Bay the Anchorage Westward Hilton, the "Sunny Jim" jam, jellies, and peanut but-



H. Noble Dick

ter company, and Tyrrell's dry and canned pet food company. The Native corporation also owns partial interests in United Bank Alaska, the Green's Creek mining venture on Admiralty Island in Southeast and in other drill-rig and vehicle companies.

Hjalmar said the company paid 30-cent-per-share quarterly dividends for all of this past fiscal year, which ended March 31. The \$1.20 in dividends was the greatest ever paid by the company. The firm paid a \$1.10 dividend in 1981, a 90-cent dividend in 1982, a 75-cent dividend in 1979 and a 25-cent

dividend in 1978.

The 1978 dividend was the first declared by the firm after it effectively began operations in 1974.

Earnings from the Westward Hilton in Anchorage was a bright spot for the firm this year. The hotel recorded revenues of \$10.3 million in 1983, the first time its revenues passed the \$10 million mark since it was purchased in 1978. The hotel's income was a key factor in the corporation's \$3.4 million profit, compared to the \$730,000 the corporation earned last year.

Dick noted in his report to shareholders that the company anticipates a good year in fiscal 1984 since it has contracted with Amoco Production Co. and Resource Associates of Alaska to explore for oil, gas and hardrock minerals on the 3-million acres of underwater land it controls in Bristol Bay. The oil leasing area is located about 150 miles southwest of Anchorage.

The firm also is planning expansion at Tyrrell's to increase its dog-food processing capacity and is planning remodeling of the lobby, hotel rooms and the Top of the World restaurant at the Westward Hilton. Remodeling, which will increase the number of patrons that can be served at the downtown restaurant, is scheduled for this fall, according to the report.

MINERALS AND MINING

LESSON 5: Environmental and Planning Considerations (a)

Time: One class period.

Objectives:

1. The students will be able to state potential conflicts between their roles as subsistence users and regional corporation members.
2. The students will be able to determine the measures that insure environmentally sound development.

Procedures:

1. Have the students read text.
2. Have the students view the videotape, "Land and Resource Management, Part III," (50 min.). Interspersed with "Discussion Breaks" this video discusses the following renewable and non-renewable natural resources of Alaska: air quality, water resources, agriculture, forest, wildlife and fish, recreation and tourism, wilderness, and minerals. The steps in developing a management program are explained.

Text:

The Bristol Bay Cooperative Management Plan brings our attention to a number of other considerations besides economic ones. To repeat part of their statement:

To development any mineral resources will require constructing roads and port facilities. Traditional problems of scarred landscapes, acid drainage, and siltation stream flag environmental concerns. (p. 6 BBCMP EIS)

The videotape excerpt on land-use management, which you will soon see, addresses the point of what you should consider before developing Native lands or any lands in Alaska for mineral development. Here are a few other considerations to think about before you view the video. Being residents of Bristol Bay probably means that you or your family are subsistence users, depending on moose, caribou, salmon, berries, and other such resources. Simultaneously, being a stockholder in your village and regional corporations may mean that you have to face conflicting uses of the land. For example, the corporation may explore lands for mineral potential and begin extracting minerals on lands used for subsistence hunting, or they may be near salmon spawning grounds. As a stockholder you have to protect and insure your corporation's survival (extracting minerals is one such way) and as a subsistence user, you have to insure the survival of the land, wildlife, and culture. These are the kinds of tough issues you are facing.

After viewing the videotape list out three considerations that any mineral developer should take into consideration on village/regional corporation or subsistence lands.

- 1.
- 2.
- 3.

MINERALS AND MINING

LESSON 6: Environmental and Planning Considerations (b)

Time: One or two class periods.

Objectives:

1. The students will be able to analyze resource maps and determine recommendations for safeguarding valuable resources.
2. The students will note major consideration involved in minerals development.
3. The students will explore their values regarding mineral development.

Procedures:

1. Have the students read enclosed text.
2. Use overlays: minerals "M" and land status "L" in conjunction with the two fish and wildlife maps on p. 18 and p. 20 of the book, Volume 1: Resource Inventory done by the BBCCP. (Your school library should have a copy.)
3. Values exercise: take the most promising mineral land (on BBNC's land) and ask the students if they would develop it.

no development _____ yes development

Note the overlay with fish and game habitat and ask who is for development if it means a 10% loss in whatever major fish and game resource is nearest the development.

against _____ for

4. Conduct the following role play activity:

If the development occurs it means that 25 new people move in. A new road is built to the nearest airport which is expanded. Habitat loss in the immediate vicinity of the development is high. The Native Regional Corporation makes \$1 million over the life of the project. Fish and game stocks are depleted (reduced) by 10% and increased population means restricted hunting. Five workers from your village get a job at the mine, making \$30,000 a year.

Have each student play a role (new worker, Native Corporation member, subsistence hunter, fish and game representative, and local worker) and act out his or her point of view. Should this area be: fully developed for highest profit? developed with safeguards and restrictions (less profit)? developed only away from prime habitat areas? not developed at all?

5. Have the students write an essay for or against mineral development for your school newspaper. Send copies to BBNC and/or the CRSA.

Text:

The following information and activities are designed to help you analyze the land-use decisions facing you as a stockholder and a subsistence user. Four types of mining and their environmental hazards are outlined below.

Placer Mines - Placer mines are those that take minerals from the surface of the land, as in stream beds in the extraction of gold and platinum. In these cases the topsoil is removed, resulting in a loss of vegetative cover. From placer mining increased siltation will occur, possibly causing damage to the stream and reducing its ability to support freshwater life, especially salmon.

Hard Rock - In Bristol Bay, one such mine exists twenty-five miles outside of Dillingham. In this case, cinnabar, the ore that contains mercury, was taken from the hard rock. One problem associated with extracting mercury is having mercury compounds enter the stream system. These compounds are toxic (poisonous) if the levels are sufficiently high.

Strip Mining - Coal is located in the Chignik area and possibly in other parts of Bristol Bay. One method of extracting coal is strip mining. Land is stripped away exposing the coal seams which are then extracted from the ground. The obvious environmental consideration is the direct disturbance of the land. Additionally, coal in the Chigniks may well be placed near stream beds. Rain water running through the cut land will carry and react with elements, polluting streams.

Gravel - The extraction of gravel potentially could occur in stream beds and in uplands. Environmental consequences would be similar to other stream disturbances, as in placer mining; increases in the amount of siltation in the water is one consequence. Salmon and other fish are susceptible to these disturbances.

The BBCMP states:

Mineral exploration and development is recognized as a primary or secondary land use throughout much of the region. As with many other forms, or development impacts on wildlife due to mineral development are difficult to assess since the future of mineral development in the area is highly speculative. (BBCMP EIS, VIII-67)

Because there is a high potential for mineral development in Bristol Bay, it is wise and prudent to consider effects of mining, including, as BBCMP states, "blasting, clearing, grading, dredging, filling, and hauling." This could mean a change in water quality, loss of stream-side vegetation buffer, the release of silty, unoxidized or toxic deposits, soil erosions, and stream channel alterations (BBCMP p. 9 EIS). Also, "much of the mining (in Bristol Bay) if it occurs will be near prime caribou and moose habitat" (p. VIII-67 EIS BBCMP).

In planning and recommending to planners where, what, and how minerals get developed it is important to know the location of mineral deposits and

their relationships to prime caribou and moose habitats. You as a resident of your village and a member of the regional corporation need to balance development and cash returns with your subsistence needs.

MINERALS AND MINING

LESSON 7: Platinum - Platinum, Alaska: A Case Study

Time: Two class periods.

Objectives:

1. The students will become familiar with the history of the platinum mining operation in southwest Alaska.
2. The students will be able to do a cost-benefit analysis of a "large-scale" mining operation.

Procedures:

Period #1

1. Have students read brief introduction in text.
2. Brainstorm the costs and benefits of mining prior to watching the videotapes "Platinum 1983" (13 min.) and "Platinum, Alaska: Early Days" (30 min.) and listening to the audiotape by Robin Reynolds (10 min.) (transcript follows introductory text).
3. Watch the videotape and listen to audiotape. (Note: "Platinum, Alaska: Early Days" is a collection of recently discovered 1937 footage of the early operations of platinum mining in Goodnews Bay. We are happy to share these rare historic films. We regret, though, the offensive bit of racism embedded in one of them, "Killbuck doesn't savvy..." You may want to use this small section to talk about implied relations between early miners and the local population.) In "Platinum 1983," Robin tells of the properties found in the mineral platinum and provides a brief history of mining in Platinum, Alaska. A dredge is shown and its operations explained. Note: "Platinum, Alaska: Early Days" is silent and the on screen cue cards are partially cut off. The first segment (18 min.) shows the building of the dredge and the second segment (22 min.) shows the mining operations.

Period #2

4. Divide the class into groups which will argue for and against mining in Bristol Bay. Each team should assess the information which they acquired from both the videotape and audiotape for economic, environmental and social costs and benefits. Hold a debate and have each side clearly make its point.
5. Assist the students in identifying environmental, cultural, and social costs as well as economic and social benefits.

Text:

Bristol Bay is a prime producer of platinum. Since the 1930's, platinum has been mined in the Goodnews Bay - Platinum area of southwestern Alaska. This relatively long history of mining operations gives us an opportunity to examine the costs and benefits of one type of mining.

We are using the Platinum case history as one method to evaluate the costs and benefits to Bristol Bay. Mining activity may increase in the future. You will need to evaluate the potential effects of this activity. Another evaluative too is cost-benefit analyses: if benefits outweigh the costs, then we may be in a position to make a favorable decision, and if the opposite is true, we may reject a plan.

Transcript of Robin Reynolds' tape:
"Growing Up in Platinum, Alaska"

Hi, my name is Robin Reynolds. Before I was married my name was Robin Jenny, and some of you over towards Togiak might remember my folks. My dad's name was Gene Jenny and we lived at the store in Platinum. I'm going to talk today about the Platinum Mines since you're studying about mining in Bristol Bay. My parents came to Bristol Bay in the 50's and although I was born in Anchorage, my mom went to Anchorage to have me. I went back to Platinum when I was two weeks old and I stayed there until I was sixteen years old. My parents worked at the mine. Dad started out as an oiler on the dredge. The dredge is what they use to mine the platinum with and it is called a placer mine. When they mine by placer mining they use equipment to strip the dirt and the rocks off the ground and they use water to rinse the rocks and that is how they get the mineral out. The mineral comes out because platinum is a lot heavier than other rocks. When they wash the rocks away the platinum just stays down in what they call the riffles. The dredge is great, huge floating building which floats in a pond. It has buckets that dig up the dirt and bring it inside. Then they wash the dirt and the platinum stays behind because it is heavier. Out the back end of the dredge they dump all the waste rock. The dredge digs up the ground and it leaves behind it big piles of rock which they call tailing piles.

The mine that was there was called the Goodnews Bay Mining Company and it started in the 1930's. The story that I was told was that a man named Walter Smith, an Eskimo man, found what he called white gold and he didn't know what it was. He asked some Gussucks what it was. They went down there and they looked at it and they knew it was platinum and so they bought the mining claim from him and then they started developing the platinum mine. It's been there since the 30's and they had to build the dredge in Platinum. They bought all the steel and all of the equipment to build the dredge. While they were building it they had lots of people there, in the hundreds, I'm not sure how many. But when I grew up they employed about thirty people during the mining season. Mining season was from the end of March until the middle of November. Most of the people who worked in the mine were gussucks that came up from Seattle. But not all of them were: they also hired Eskimo people who stayed in Platinum and didn't go fishing. They hired carpenters, oilers, people who worked on the equipment, and people who worked in the store.

The mining camp wasn't right where they call downtown. Downtown was where the store was and that's where most of the Eskimos lived. The mining camp was ten miles away, up into the hills, and there was a little community at the mining camp. They had lots of houses and that's where they had their shops. The mine provided housing for the people who worked in the mine but didn't live in Platinum. Some of the Eskimo people that worked in Platinum were not from Platinum, so the mine gave them housing (I believe they were from Kwethluk, I can't remember their name) and some people from Goodnews lived up at the mining camp. The mine also owned the store that was downtown. The store was primarily for the mine, and they weren't trying to make money on it. My folks managed the store for about ten years. It was a big store and lots of people would come from Goodnews and Togiak and Klawock to shop at the store. They would come in the summer and also in the winter by snowmachine. The mine also had great big fuel storage tanks so that people could buy fuel. They would come from all around to get fuel, either in their boats or by snowmachine.

Downtown, where the store was, all of our supplies came by barge to the store once a year (or twice a year) on the North Star. Then Northland Marine started coming with their barge. They also had a big airfield and the jets could even land there. F27s would come in the spring time. When the mine would open up and they brought in a large crew, sometimes Northern Consolidated (before Wien) used to land the F27s on the airfield. It was a big long gravel airfield and the mine had a snowplow that they used to keep the airfield free of snow during the winter. It also was a lighted airfield. They had lights all the way down the side so that in the winter time or at night when it was dark airplanes could land, if there was an emergency. Sometimes the lights wouldn't work and we would have to go out and make smudge pots for the airplanes. The mine also, during the summer, hired what they called a medic. He was a doctor and some of your parents might know him. His name was Norman Boles. Sometimes they called him Peedy, and if people needed help or were hurt he would give them medicine or he and my dad used to fly them into Kanakanak or up to Bethel.

From what I have been saying you can tell that when a mine or a big corporation comes in, sometimes there are lots of benefits to the local people: there are jobs and better facilities. The mine also had water downtown where most of the people lived and, although they didn't provide water right to the houses, they ran a waterline through town and then put outdoor spigots up so people wouldn't have to pack water. The spigots were right by their houses. Despite all of these benefits, sometimes there's an impact on the environment that is not good. You need to look at that when things are being developed. When they placer mine, and many other kinds of mining, strip mining, like they might do for coal, they rip the ground up and they tear it up. When they are all done it doesn't look like it used to. Sometimes when there is platinum it affects the little river that the mining was done in. No more salmon came up it. It wasn't a real big one, but if it had been a big one like the Nushagak, it would have been a big deal. Those are the things that you need to think about, your cost and your benefit of having mining or any other development in your community.

Even though Platinum is one of the larger platinum mining communities in Alaska, it is not real big and that is what I liked about growing up there. The community wasn't real big and everybody knew each other. People came

back for years. A lot of Gussucks came back for thirty years until the mine closed. It was just a small mining community and the people were very close and everyone tried to help each other. That's what I enjoyed about growing up there and also growing up a little bit different from the rest of the world. I think most of us in this area are doing the same thing, and I think we now would be proud of it.

MINERALS AND MINING

LESSON 8: Public Participation

Time: Two class periods.

Objectives:

1. The students will be able to suggest specific regulations for minerals development in Bristol Bay.
2. The students will communicate their ideas to the Bristol Bay Coastal Resource Service Area Board.

Procedures:

1. Read text.
2. Listen to Greg Peters' audiotape on minerals (a partial transcript follows brief introductory text). The audiotape is 8 minutes long and the section pertaining to minerals begins at #243 on my machine counter.
3. Have the class break into groups of three; each group writes out any additional regulations they feel are necessary. You should help the students see some of the ways in which the rules are incomplete. For example, all the rules relate to anadromous streams but not to other critical habitats. The students may feel the rules are too prohibitive or too lenient.
4. Have your class submit their findings to Greg Peters, CRSA, BBNA, Dillingham, Alaska 99576.
5. Public Hearing. The students are assigned to prepare a clear, well-written statement which can be used as testimony in a public hearing. Testimony should be 3-5 minutes and state students' position on mining development in areas affecting their village.

Possible settings for presentation of testimony:

- a. at an actual public participation meeting if one is scheduled for your village.
- b. invite Greg Peters or a Coastal Resource Service Area Board Member to the class to hear students' views.
- c. create a mock hearing, assigning students to play roles involved.
- d. mail testimony to Coastal Resource Service Area Board.

Optional Activity

- a. Have the class break into small groups: village corporations, miner's association, regional corporation, individual prospectors, BLM bureaucrat, etc. Clearly assign roles commensurate with their titles. Spell out their roles. In other words, set the stage; let each

student/group know what their assignment is. Each group can come up with what regulations or lack of regulations they want in the Coastal Resource Service Area Plan. Set a time limit for this phase of the activity.

Have the regional map and minerals map on the overhead projector. Once the groups have come up with their regulations - list them out separately. Discuss the consequences of the various sets of recommendations. Make these differences very clear.

- b. Round II - Have the "players" sit around a table and negotiate their regulations. Each player should think in terms of what he or she wants for his or her agency; arguing strongly for his or her case. Also, the students should think of "trading off," that is, "I'll give you this for that."

Text:

You have had a chance to study minerals, their "costs and benefits" to Bristol Bay, and you have formed opinions on ways of safeguarding the environment while extracting minerals. This information can be put to very practical use. The Coastal Resource Service Area Board (CRSA) is currently making up rules that all individuals and corporations in Bristol Bay will have to follow. Some of these rules are discussed below, in a transcript of a tape made by Greg Peters, project director for the Bristol Bay Coastal Service Area Board. Read this transcript while your teacher plays the tape.

Partial Transcript - Greg Peters on Minerals and Mining

The policy refers to something called placer mining which you may have discussed already. That's the kind of mining that occurs right in the streams, usually for gold. It reads as follows: "Placer mining activities will not reduce water quality in lakes, rivers and streams designated as salmon water bodies." Existing water quality in the tributaries to these anadromous water bodies, that's what they're called, will also be maintained. What we're saying here is it just so happens that placer mining activities tend to really dirty up a stream. A lot of the sediments are kicked up and it is not very good, especially for salmon. What we're saying is it is not a direct ban on placer mining, we're just saying that it cannot, it will not, be allowed to reduce water quality. If they can invent some kind of way to do it without dirtying the water, then maybe it'll be allowed. But they're going to have to prove that they can do it. And right now, from what we can gather, it's pretty hard for them to do that, although some are getting pretty close to it. We're talking about the tributaries because if a lot of dirt's washing down into the main streams, that has just as much an effect.

Okay, another rule we have pertains to gravel and it's particularly important to villages. Dredging in anadromous water bodies with the purpose of obtaining land fill or construction material will not be permitted. Now this rule we're probably going to revise a little bit and we'd sure appreciate some help from you if you have some ideas. But, basically, this would prohibit people going in to the rivers and digging up the gravel. The reason for that is that's where fish spawn and our way of looking at it, it really doesn't matter if it's an oil company or the village who's digging up that gravel if it's going to affect the fishery. That's the message, that's the message, that we've got to protect the fishery. This rule here might affect the villages particularly hard. So we've accompanied it with another rule that just states, "The state should aid village government in the identification of on-shore sources of fill material suitable for village use." What we're saying is, usually the gravel is in the river and it's easy to get. We're saying the state should help villagers out in finding some other ways of getting gravel.

MINERALS AND MINING

OPTIONAL ACTIVITIES:

Time: One or two class periods.

Objective:

Students become familiar with local mining activities.

Procedures:

A. Talk to an elder.

1. Invite a person to the classroom who has been involved in mining or who knows of "old-timers" mining in the area and have them tell about mining.

2. Have student listen to the stories about mining experiences and then ask questions. Examples of questions might include:

What types of minerals are nearby?

How are the minerals extracted from the ground and then from the ore?

Where are the minerals transported and sold?

What effect does mining have on the land, streams, plants, and animals?

3. Follow-up by taking the students out to a nearby stream to pan for gold, mercury, platinum or other locally existing minerals. Have a community member join the group.

B. The Peat Project

Read about Peat project in the enclosed newspaper article, "Belt Creek Peat Project: Phase II" for an example of another type of mining operation.

Students may address all questions to:

Debby Tennyson
Director, Peat Project
BBNA
Dillingham, Alaska 99576

Belt Creek Peat Project: Phase II

Bristol Bay Times - February 1, 1983

The Belt Creek Peat Project, a joint effort by the Bristol Bay Native Association and Choggiung Limited, is about to enter "Phase 2" with the purchase of equipment to mine peat from a one-acre parcel of muskeg bog near Mile 14 on the Lake Road.

According to BBNA Deputy Director Debby Tennyson, negotiations are underway with an Oregon firm to purchase an extruder to dig the peat. The extruder will dig four feet down into the bog through a two-inch-wide trench and spit out "long sausages of peat" which will then be dried in Choggiung's quonset hut at the end of the Lake Road.

When dry the peat can be burned on a grate installed in a wood stove. The grate costs \$40 to \$60, and facilitates burning by allowing air circulation around the peat.

Although peat has been used as a fuel for centuries in Ireland and parts of northern Europe, it has never been used extensively on this continent, even though Alaska, including the Bristol Bay region, has vast reserves. The one-acre parcel at Belt Creek contains an estimated 50 tons of peat.

Consequently state officials are also interested in seeing how it works. A number of local households will be supplied with grates for their wood

stoves and dried peat to test next winter. The environmental impact of the mining operation will also be monitored, Tennyson said.

The project was funded by a \$165,000 grant from the state, which will be used to purchase the extruder, for labor and other costs. Plans are to ship the extruder to Dillingham on a spring barge, and begin digging the peat in July.

Nushagak Electric Cooperative is also looking into the possibility of using peat to power electrical generators. According to a consultant's estimate, enough peat lies beneath the flats north of the Dillingham boat harbor to supply the city's electrical needs for some 50 years.

UNIT VII: STATE LAND DISPOSAL

OBJECTIVES:

1. The students will understand the reasons for state land disposals.
2. The students will understand the concept of private ownership.
3. The student will be able to predict potential impacts of a state land disposal program upon a given area of land in Bristol Bay.
4. The students will be able to plan for disposals so that they have a minimal impact upon the community.
5. The students will be able to participate in public meetings on land disposals in Bristol Bay.

LESSONS:

1. State Land Disposals: Settlement.
2. Disposals and Subsistence Laws.
3. Proposed Settlements: The Potential Impacts.
4. Analysis: Impacted Areas -- State Land Disposals.
5. Shaping the Disposal for Least Harmful Impact.
6. Guidelines for Land Disposal.

MATERIALS LIST: Note: Items in brackets refer to either resources available in your school or resources that must be requested in advance.

NOTE: You will need to have on hand topographical maps for lessons in this unit. On the following pages, USGS order forms are included for your convenience. The maps must be ordered through the USGS office in Fairbanks.

Lesson 1 - Text.

Accompanying package of overlays.

[Videotape:* "Bristol Bay: Planning for the Future" (26 min.)]

Lesson 2 - Text.

"Be It Enacted... The Subsistence Law."

"Subsistence Provision — Parts 1-5," by Paul Jenkins. Fairbanks Daily News Miner. April 1982.

"Study cites 'self-limiting' factors in Bush," by Fred Pratt.

Lesson 3 - Accompanying package of overlays.

Text.

[Topographical maps. See NOTE above]

"In Productive Harmony: A Brief Explanation of Environmental Impact Statements."

Lesson 4 - [Topographical maps. See NOTE above]

Lesson 6 - Text and policies.

[Audiotape:* "Greg Peters." (10 min.)]

Transcript of audiotape.

*Copies of audiotapes and videotapes may be obtained by writing

College of Human and Rural Development
Resource Center
505 Gruening Building
University of Alaska-Fairbanks
Fairbanks, Alaska 99775

Blank audiotapes and VHS videotapes must accompany each request. Whenever possible, more than one program will be dubbed onto a tape.

Mail this order form to:

ALASKA DISTRIBUTION SECTION, USGS
BOX 12, NEW FEDERAL BUILDING
101 12TH AVENUE (ROOM 126)
FAIRBANKS, ALASKA 99701

PHONE 907-456-0144

Please send maps to:

(YOUR ZIP CODE NUMBER IS REQUIRED)

MAPS 1:63,360 = 2.50 each

PREPAYMENT IS REQUIRED

This order must be accompanied by check or
money order payable to: DEPARTMENT OF THE INTERIOR - USGS

DISCOUNT: On an order amounting to \$500.00

more, a 50% discount is allowed.

ALASKA

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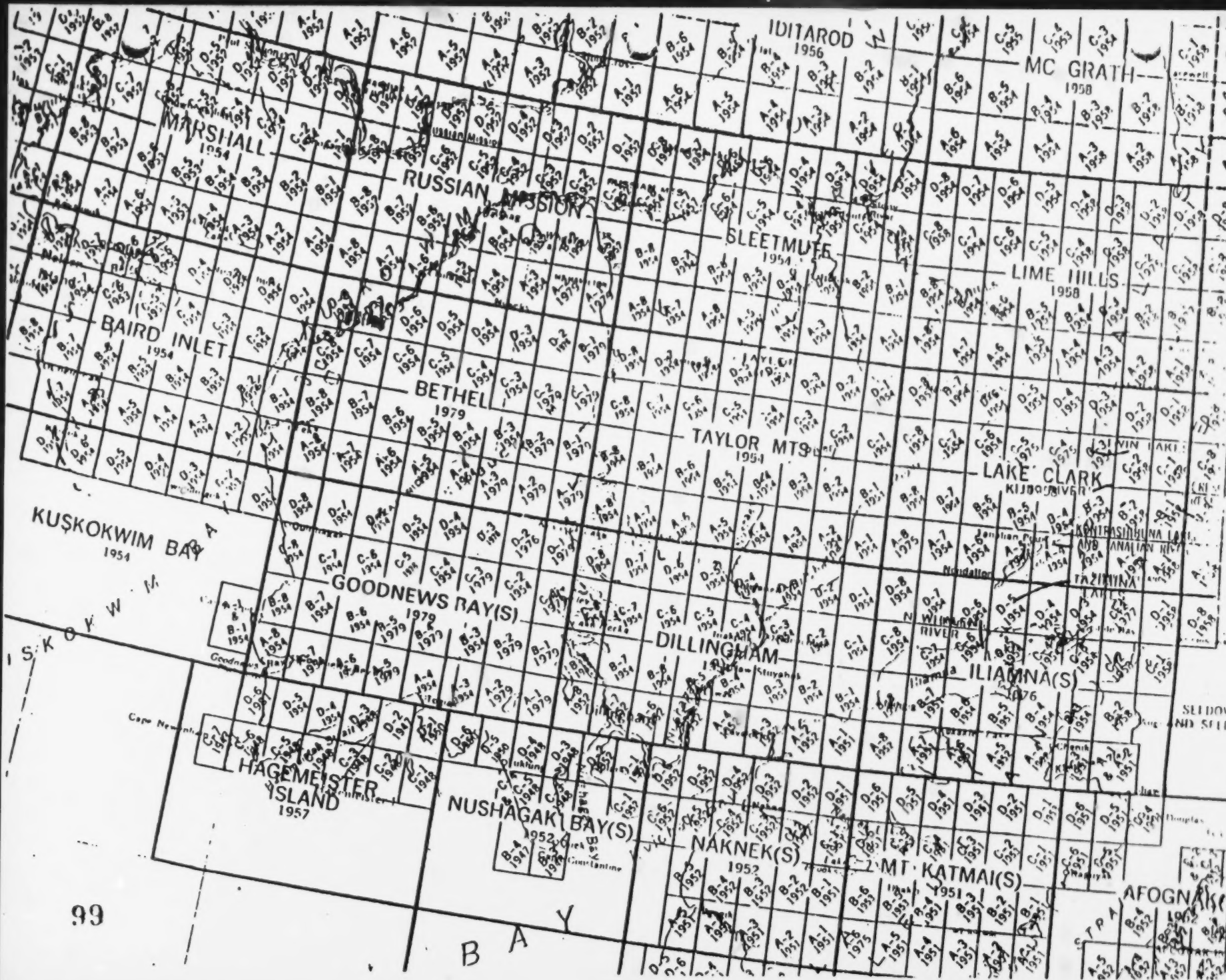
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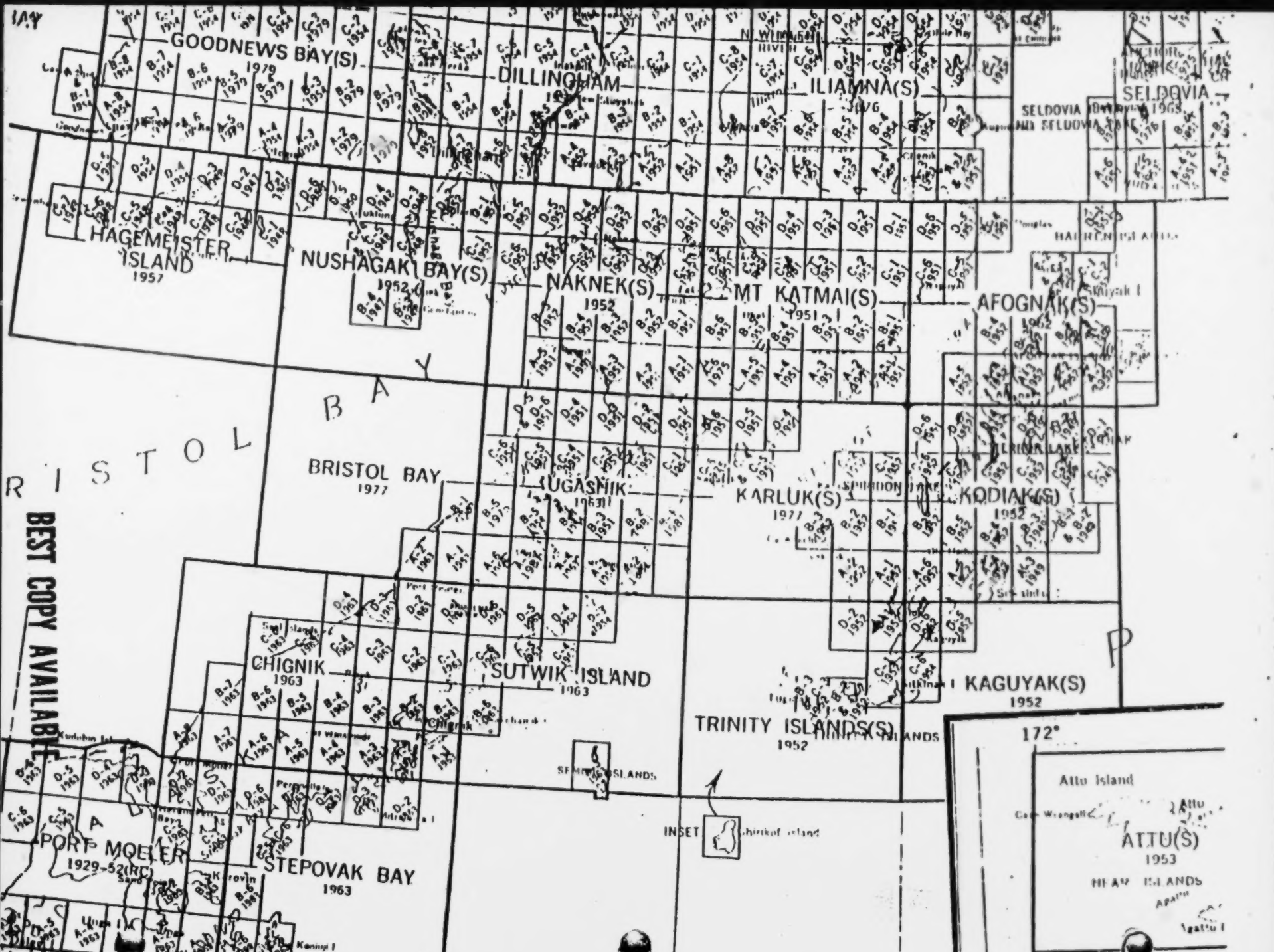
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Bethel A-3	Chignik B-7	Goodnews Bay A-3	Iliamna A-4	Lake Clark A-3	Naknek A-3	Taylor Mts. A-3
Bethel A-4	Chignik C-1	Goodnews Bay A-4	Iliamna A-5	Lake Clark A-4	Naknek A-4	Taylor Mts. A-4
Bethel A-5	Chignik C-2	Goodnews Bay A-5	Iliamna A-6	Lake Clark A-5	Naknek A-5	Taylor Mts. A-5
Bethel A-6	Chignik C-3	Goodnews Bay A-6	Iliamna A-7	Lake Clark A-6	Naknek B-1	Taylor Mts. A-6
Bethel A-7	Chignik C-4	Goodnews Bay A-7	Iliamna A-8	Lake Clark A-7	Naknek B-2	Taylor Mts. A-7
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Bethel B-2	Chignik D-1	Goodnews Bay B-2	Iliamna B-4	Lake Clark B-2	Naknek B-5	Taylor Mts. B-2
Bethel B-3	Chignik D-2	Goodnews Bay B-3	Iliamna B-5	Lake Clark B-3	Naknek C-1	Taylor Mts. B-3
Bethel B-4	Chignik D-3	Goodnews Bay B-4	Iliamna B-6	Lake Clark B-4	Naknek C-2	Taylor Mts. B-4
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Bethel B-8	Dillingham A-2	Goodnews Bay B-8	Iliamna C-2	Lake Clark B-8	Naknek C-6	Taylor Mts. B-8
Bethel C-1	Dillingham A-3	Goodnews Bay C-1	Iliamna C-3	Lake Clark C-1	Naknek D-1	Taylor Mts. C-1
Bethel C-2	Dillingham A-4	Goodnews Bay C-2	Iliamna C-4	Lake Clark C-2	Naknek D-2	Taylor Mts. C-2
Bethel C-3	Dillingham A-5	Goodnews Bay C-3	Iliamna C-5	Lake Clark C-3	Naknek D-3	Taylor Mts. C-3
Bethel C-4	Dillingham A-6	Goodnews Bay C-4	Iliamna C-6	Lake Clark C-4	Naknek D-4	Taylor Mts. C-4
Bethel C-5	Dillingham A-7	Goodnews Bay C-5	Iliamna C-7	Lake Clark C-5	Naknek D-5	Taylor Mts. C-5
Bethel C-6	Dillingham A-8	Goodnews Bay C-6	Iliamna C-8	Lake Clark C-6	Naknek D-6	Taylor Mts. C-6
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Bethel D-1	Dillingham B-3	Goodnews Bay D-1	Iliamna D-3	Lake Clark D-1		Taylor Mts. D-1
Bethel D-2	Dillingham B-4	Goodnews Bay D-2	Iliamna D-4	Lake Clark D-2		Taylor Mts. D-2
Bethel D-3	Dillingham B-5	Goodnews Bay D-3	Iliamna D-5	Lake Clark D-3		Taylor Mts. D-3
Bethel D-4	Dillingham B-6	Goodnews Bay D-4	Iliamna D-6	Lake Clark D-4		Taylor Mts. D-4
Bethel D-5	Dillingham B-7	Goodnews Bay D-5	Iliamna D-7	Lake Clark D-5		Taylor Mts. D-5
Bethel D-6	Dillingham B-8	Goodnews Bay D-6	Iliamna D-8	Lake Clark D-6		Taylor Mts. D-6
Bethel D-7	Dillingham C-1	Goodnews Bay D-7		Lake Clark D-7		Taylor Mts. D-7
Bethel D-8	Dillingham C-2	Goodnews Bay D-8		Lake Clark D-8		Taylor Mts. D-8
	Dillingham C-3	Hagemeister Island C-1				
	Dillingham C-4	Hagemeister Island C-2				
Chignik A-1	Dillingham C-5	Hagemeister Island C-3			Nushagak Bay B-3	
Chignik A-2	Dillingham C-6	Hagemeister Island C-4			Nushagak Bay B-4	
Chignik A-3	Dillingham C-7	Hagemeister Island C-5			Nushagak Bay C-1	
Chignik A-4	Dillingham C-8	Hagemeister Island C-6			Nushagak Bay C-3	
Chignik A-5	Dillingham D-1	Hagemeister Island C-7			Nushagak Bay C-4 & C-5	
Chignik A-6	Dillingham D-2	Hagemeister Island D-1			Nushagak Bay D-1	
Chignik A-7	Dillingham D-3	Hagemeister Island D-2			Nushagak Bay D-2	
Chignik A-8	Dillingham D-4	Hagemeister Island D-3			Nushagak Bay D-3	
Chignik B-1	Dillingham D-5				Nushagak Bay D-4	
Chignik B-2	Dillingham D-6	Hagemeister Island D-4			Nushagak Bay D-5	
Chignik B-3	Dillingham D-7	Hagemeister Island D-5			Nushagak Bay D-6	
Chignik B-4	Dillingham D-8	Hagemeister Island D-6				

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Afnak
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Baird Inlet
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Barrow
Barter Island
Beaver
Beckey Point
Bendeluben
Bering Glacier
Bethel
Bettles
Big Delta
Black
Black River
Blyng Sound
Bradfield Canal
Bristol Bay
Candle
Cape Mendocino
Chandalax
Chandler Lake
Charley River
Chignik
Christian
Circle
Cold Bay
Colleen

Cordova
Craig
De Long Mountains
Demarcation Point
Dillingham
Dixon Entrance
Eagle
Fairbanks
False Pass
Flaxman Island
Fort Yukon
Gareloi Island
Goodnews Bay
Gulkana
Hagemeister Island
Harrison Bay
Healy
Holy Cross
Hooper Bay
Howard Pass
Hughes
Icy Bay
Iditarod
Ikpikpuk River
Iliamna
Juneau
Kaguyak
Kaniatna River
Karluk
Kasei River
Kenai
Ketchikan
Kikla River
Kiska
Kodiak

Kotzebue
Kuskokwim Bay
Kwiguk
Lake Clark
Lima Hills
Livengood
Lookout Ridge
Marshall
McCarthy
McGrath
Meade River
Medfra
Melozitna
Middleton Island
Misheguk Mountain
Mt. Fairweather
Mt. Hayes
Mt. Katmai
Mt. McKinley
Mt. Michelson
Mt. St. Elias
Nabesna
Naknek
Noatak
Nome
Norton Bay
Nulato
Nunivak Island
Nushagak Bay
Ophir
Petersburg
Philip Smith Mons.
Point Hope
Point Lay
Port Alexander

Port Moller
Pribilof Islands
Prince Rupert
Rat Islands
Ruby
Russian Mission
Sagavanirktok
St. Lawrence
St. Matthew
St. Michael
Samalga Island
Seguan
Selawik
Seldovia
Seward
Shishmaref
Shungnak
Simeonof Island
Sitka
Skagway
Sleetmute
Solomon
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Talkeetna Mtns.
Tanacross
Tanana
Taylor Mountain
Teller
Teshekpuk
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ANCHORAGE (NP 5,6).....	FAIRBANKS (NQ 5,6).....
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ATTU ISLAND (NM,NH 59,60,1).....	MackENZIE BAY (NR 7,8).....
BARROW (NR 3,4).....	HOME (NO 3,4).....
BETHEL (NP 3,4).....	PRINCE RUPERT (NN 8,9).....
BRISTOL BAY (NO 3,4).....	ST LAWRENCE ISLAND (NP 1,2).....
COLD BAY (NN 3,4).....	SITKA (NO 7,8).....
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Map 5-B.....ea	2.40	Map 11-A.....ea	1.20
Map 5-C.....ea	2.40	Map 16-A.....ea	.70
Map 5-D.....ea	2.40		

OTHER MAPS

Map of North America	1 Piece,	1:10,000,000,	approx 3' x 3'	ea	3.10
World Map	1 Piece,	1:30,000,000,	approx 3½' x 4½'	ea	4.30
World Map	3 Piece,	1:22,000,000,	approx 5' x 8½'	set	10.80
World Map	6 Piece	1:14,000,000,	approx 9' x 11'	set	35.00

MISCELLANEOUS

STATE LAND DISPOSAL

LESSON 1: State Land Disposals: Settlement

Time: Two class periods.

Objectives:

1. The students will be aware of the state land disposal program.
2. The students will be aware of changing land ownership patterns.
3. The students will begin to identify the major issues relating to state land disposals.

Note: If all parts of this activity are utilized, the lesson may last up to three class periods.

Procedures:

1. Have students begin reading the enclosed text.
2. Display land ownership overlay, "Land Status." Note Native-owned lands, federal lands, state lands. (A xerox of this overlay is also included with the text material.)
3. View the "Bristol Bay: Planning for the Future" videotape again and pay special attention to the section concerning state land disposals (the videotape is approximately 30 minutes). The videotape discusses the importance of the Bristol Bay Cooperative Management Plan and was produced by the Bristol Bay Study Group. Various government and corporation leaders give statements of interest.
4. Hold a brief discussion on possible conflicts that may occur due to land disposals in Bristol Bay.
5. If the class seems to be interested, have students role-play a young couple interested in obtaining land in Bristol Bay, state officials who want to bring land into private ownership, a village elder who is concerned about traditional uses, and a fish and game biologist who is concerned about increased pressures placed on existing resources such as moose and caribou.

Text:

Introduction

A long time ago, nobody owned the land, nor was the land divided up. It was just there. People used it. In Alaska this was the case until very recently. After Alaska became a federal territory in 1884 (it had been a possession of a federal government since 1867 when it was bought by the Russians) land ownership patterns began to change. Joining the union and becoming a state further changed the land ownership patterns. Now there are two large landowners in Alaska—the federal government and the state government. With the discovery of oil in Prudhoe Bay, Native self-determination, and other state and federal pressures, Alaska's Natives also became landowners through the Alaska Native Claims Settlement Act of 1971. These changes brought with them new ways of using and seeing the land. Land has become private property to be used the way an individual chooses to use it. This concept of land ownership and land use is being felt in all parts of the state. The state is now trying to get a substantial amount of land into private hands.

State land disposal will affect you. Long after many of the planning groups are forgotten, state land disposals will continue to be an issue. You may be wondering why others are interested in lands in Bristol Bay; what role the State plays in land disposal; and anyway, what is land disposal? In the next pages, these questions will be answered.

As you know, the State owns a considerable amount of land in Bristol Bay. See the map of Bristol Bay area lands on the following page. As you can see on the map, almost all of the villages of Bristol Bay are near State land. Some of this State land is prime moose, caribou and other significant fish and wildlife habitat. What the State does with this land is of consequence to you. For example, a State Land Disposal might mean that land will be staked into parcels, such as five acre lots. In time, cabins could be built on the lots. The Bristol Bay Cooperative Management Plan Study Group listed a number of questions it wants answered so that they can determine the impacts for Bristol Bay villages. Some of their questions are: Where will the land be leased and sold? How many acres are involved? What will happen to land after it is sold? If the State disposed of land near your village, what would you want to know in order to safeguard your interests?

List 3 to 5 Questions You Want Answered

- 1.
- 2.
- 3.
- 4.
- 5.

Here are some questions that I have:

1. What is this land going to be used for?
2. Will I still have access to the land?
3. Will I be stopped from crossing or using this land?
4. If more people move into the area, will we get along?
5. How will more people affect the local land and resources?

Maybe your thoughts combined with mine are more complete.

WHY ARE PEOPLE INTERESTED IN STATE LANDS?

The Department of Natural Resources is the State agency that is responsible for disposing of the State land. The Department of Natural Resources (DNR) is located in Anchorage and is responsive to the public. The commissioner of DNR says:

The experience of the Department of Natural Resources demonstrates that many Alaskans feel a strong deep-seated desire to acquire a parcel of land from the State on some reasonable basis.

(Memorandum, October 7, 1982; Department Order 83-17.)

This means that many people want private land. But a substantial amount of Alaska's land is in the hands of Federal and State government. Compared to most other states, much of Alaska's land is "locked up" by government ownership.

Recently, as a result of ANCSA, quite a bit of this land has been conveyed, or is in the process of being conveyed, to village and regional Native corporations. That means that some of the land is changing from state or federal ownership to local village or regional corporation ownership. As you can see on the Bristol Bay Land Status map, Bristol Bay is no exception.

Private land does not even show on the regional map, although we all know that some individuals own land in the Bristol Bay area. It is insignificant compared to other forms of ownership. Still, many private individuals want their own land to build a cabin, to have a homesite, or to have a place to get away from it all. These desires are very strong for many people.

The State Legislature at one point passed a law requiring that 100,000 acres per year be disposed of, or transferred to private ownership. The State has until recently proceeded along this path. Now, the State is not requiring a set quota, but the Department of Natural Resources is still actively aiming to transfer more State land into private ownership.

The objective, or the goal, of this unit is for you to determine what effect State land disposal may have upon your own lifestyle and community, and for you and your classmates to determine how and in what ways you might want to get involved in public participation.

STATE LAND DISPOSAL

LESSON 2: Disposals and Subsistence Laws

Time: Two to three class periods

Objectives:

1. The students will understand the state and federal subsistence laws.
2. The students will be aware of the Bristol Bay Cooperative Management Plan's role in developing management guidelines for the lands in Bristol Bay.
3. The students will begin to determine their legal rights under the subsistence laws.

Procedures:

1. Students read enclosed text and newspaper articles.
2. Ask the class to state what rights they have according to the subsistence laws.
3. Does the state have the "right" to do what it wants with its land? (There are no right and wrong answers — have the students investigate the implications of the question.)
4. Discuss the implications of the subsistence laws to state land disposals.
5. Have the students write to Alaska Legal Services, 615 H Street, Suite 100, Anchorage, Alaska 99501, to determine their rights under the state and federal subsistence laws and possible conflicts caused by other mandates.

Text:

DISPOSALS: SUBSISTENCE LAWS

Introduction

In today's complex world, it is possible that a local, state, or federal agency may each have policies that conflict with one another. One policy may say that you are allowed to do something while another policy may contradict it. Before we evaluate potential impacts of land disposals, let's determine what rights you may have according to state and federal law. The best place to start looking for this information is with the state and federal subsistence laws. These laws discuss land use and certain preferences for taking fish and game. In a way, knowing these laws lets you know your rights.

The following information from the Alaska National Interest Lands Conservation Act (ANILCA) sets out guidelines for the management and use of federal lands regarding subsistence opportunities. Read these sections.

As you read, think about these questions, and then answer them when you are finished with the reading:

1. What are these sections of the law seeking to protect?
2. What is the role of Congress in the subsistence issue?
3. What is the primary use of Alaska's fish and wildlife on federal lands?

Federal

Public Law 96-487
Subsistence Management and Use

- Sec. 801. The congress finds and declares that --
- (1) the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands and by Alaska Natives on Native lands is essential to Native physical, economic, traditional, and cultural existence and to non-Native physical, economic, traditional, and social existence.
 - (2) ...no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses;
 - (3) continuation of the opportunity for subsistence uses of resources on public and other lands in Alaska is threatened by the increasing population of Alaska, with resultant pressure on subsistence resources, by sudden

decline in the populations of some wildlife species which are crucial subsistence resources, by increased accessibility of remote areas containing subsistence resources, and by taking of fish and wildlife in a manner inconsistent with recognized principles of fish and wildlife management;

(4) in order to fulfill the policies and purposes of the Alaska Native Claims Settlement Act and as a matter of equity, it is necessary for the Congress to invoke its constitutional authority under the property clause and commence clause to protect and provide the opportunity for continued subsistence uses on the public lands by Native and non-Native rural residents; and

(5) ...the continuation of the opportunity for a subsistence way of life by residents of rural Alaska require that an administrative structure be established for the purpose of enabling rural residents who have personal knowledge of local conditions and requirements to have a meaningful role in the management of fish and wildlife and of subsistence uses on the public lands in Alaska.

Sec. 802. ...the utilization of public lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence uses to the resources of such lands...

Sec. 810. No such withdrawal, reservation, lease, permit or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency--
(1) gives notice to the appropriate State agency and the appropriate local communities and regional councils established...
(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and
(3) determines that such a significant restriction of subsistence uses is necessary,... will require a minimal amount of public lands... and steps will be taken to minimize uses and resources resulting from such actions...

State

The state subsistence law also describes subsistence use and the need for land use policies regarding fish and game. Read the following article on the State's Subsistence Law.

PART II

The Bristol Bay Cooperative Management Plan and the Coastal Service Area Boards have some jurisdiction over State land disposal and its impact on subsistence use. In fact, the settlement goal of BBCMP is to:

"Provide opportunities for the expansion of existing community and recreational or remote homesite settlement that meets current and projected demand for private land while avoiding significant adverse impacts on other important resources and users."

The Cooperative Management Plan also says that it will "avoid critical moose winter habitat" (BBCMP, Environmental Management Statement, p. 26) meaning land disposals should not occur in those habitats.

FILL IN THE BLANKS

Federal and State law, the Cooperative Management Plan, and the Coastal Area Service Board seek to insure continued _____ use of fish and _____.

Using the Facts

Knowing something about the subsistence laws and state land disposals will help you begin to make judgments as to the effect of land disposal on subsistence. There are two related questions you must answer to make this judgment.

1. Will the State Land Disposal program negatively impact fish and wildlife resources in your area? That is, are moose, caribou, or fish scarce so that increased use will diminish the subsistence catch?
2. How will more people in the region, in your area, affect your lifestyle? Will it bring money to the region? Will it cause conflict between new settlers and long-time residents?

In summary, we want to know how State land disposals will affect fish and wildlife and the people who already live in the areas. Remember the law and the planning groups support fish and wildlife subsistence use first. The responsibility is on any agency affecting subsistence use, including DNR, to show no "significant adverse impacts on important resources and users."

"Be it enacted..."

THE SUBSISTENCE LAW

LAWS OF ALASKA

1978

Source: SCS CSHB 960 am S
Chapter No: 151

AN ACT

Relating to fish and game management.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

Section 1. INTENT. The legislature finds that there is a need to develop a statewide policy on the utilization, development and conservation of fish and game resources, and to recognize that those resources are not inexhaustible and that preferences must be established among beneficial users of the resources. The legislature further determines that it is in the public interest to clearly establish subsistence use as a priority use of Alaska's fish and game resources and to recognize the needs, customs and traditions of Alaskan residents. The legislature further finds that beneficial use of those resources by all state residents should be carefully monitored and regulated, with as much input as possible from the affected users, so that the viability of fish and game resources is not threatened and so that resources are conserved in a manner consistent with the sustained-yield principle.

Sec. 2. AS 16.05.090 is amended by adding a new subsection to read: (c) There is established in the Department of Fish and Game a section of subsistence hunting and fishing.

Sec. 3. AS 16.05 is amended by adding a new section to read: Sec. 16.05.094. DUTIES OF SECTION OF SUBSISTENCE HUNTING AND FISHING. The section of subsistence hunting and fishing shall

(1) compile existing data and conduct studies to gather information, including data from subsistence users, on all aspects of the role of subsistence hunting and fishing in the lives of the residents of the state;

(2) quantify the amount, nutritional value, and extent of dependence on food acquired through subsistence hunting and fishing;

(3) make information gathered available to the public, appropriate agencies, and other organized bodies;

(4) assist the department, the Board of Fisheries,

and the Board of Game in determining what uses of fish and game, as well as which users and what methods, should be termed subsistence uses, users, and methods;

(5) evaluate the impact of state and federal laws and regulations on subsistence hunting and fishing and, when corrective action is indicated, make recommendations to the department;

(6) make recommendations to the Board of Game and the Board of Fisheries regarding adoption, amendment and repeal of regulations affecting subsistence hunting and fishing;

(7) participate with other divisions in the preparation of statewide and regional management plans so that those plans reorganize and incorporate the needs of subsistence users of fish and game.

Sec. 4. AS 16.05.251 is amended by adding a new subsection to read: (b) The Board of Fisheries shall adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) permitting the taking of fish for subsistence uses unless the board determines, in accordance with the Administrative Procedure Act, that adoption of such regulations will jeopardize or interfere with the maintenance of fish stocks on a sustained-yield basis. Whenever it is necessary to restrict the taking of fish to assure the maintenance of fish stocks on a sustained-yield basis, or to assure the continuation of subsistence uses of such resources, subsistence use shall be the priority use. If further restriction is necessary, the board shall establish restrictions and limitations on and priorities for these consumptive uses on the basis of the following criteria:

(1) customary and direct dependence upon the resource as the mainstay of one's livelihood;

(2) local residency; and

(3) availability of alternative resources.

Sec. 5. AS 16.05.255 is amended by adding a new subsection to read: (b) The Board of Game shall adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) permitting the taking of game for subsistence uses unless the board determines, in accordance with the Administrative Procedure Act, that adoption of such regulations will jeopardize or interfere with the maintenance of game

(continued)

resources on a sustained-yield basis. Whenever it is necessary to restrict the taking of game to assure the maintenance of game resources on a sustained-yield basis, or to assure the continuation of subsistence uses of such resources, subsistence use shall be the priority use. If further restriction is necessary, the board shall establish restrictions and limitations on and priorities for these consumptive uses on the basis of the following criteria:

(1) customary and direct dependence upon the resources as the mainstay of one's livelihood;

(2) local residency; and

(3) availability of alternative resources.

Sec. 6. AS 16.05.257 (a) is amended to read: (a) The Board of Game, at its regularly scheduled annual meeting and other meetings held under authority of sec. 300(a) of this chapter, shall consider and may adopt regulations providing for subsistence hunting in a game management unit or subunit or a portion of a unit or subunit upon

(1) recommendation of the department, based on biological evidence;

(2) the recommendation of the active local advisory committees for that game management unit or subunit or a portion of a unit or subunit;

(3) the written petition of not less than 100 interested residents of that game management unit or subunit; or

(4) the written petition of not less than 25 interested residents of an area which is requested for establishment as a subsistence area within a game management unit or subunit.

Sec. 7. AS 16.05.257(c) is repealed and re-enacted to read: (c) No regulations may be adopted by the Board of Game under (a), (b) or (f) of this section unless in addition to the requirements of AS 44.62.180 - 44.62.290, the department

(1) holds public hearings, after reasonable notice, at least 30 days before the meeting at which the regulation is to be adopted, with at least one of the hearings being held in close proximity to the area potentially affected;

(2) presents at the hearings the information provided for in (e) of this section;

(3) makes the information provided for in (e) of this section available to the appropriate advisory committees and to petitioners if consideration of adoption of regulations was prompted by petitions under (a) (3) or (4) of this section; comments shall be received by the board until 10 days before any adoption of regulations.

Sec. 8. AS 16.05.257(d) is amended to read: (d) A petition submitted under (a)(3) - (4) of this section shall contain a complete description of the area requested as a subsistence area and a specification of the species within the area considered necessary for subsistence use. A petition or recommendation made under (a)(2), (3) or (4) of this section must be filed with the department at least 75 days before the

meeting of the board at which the petition or recommendation is to be considered.

Sec. 9. AS 16.05.257(e) is repealed and re-enacted to read: (e) The department shall investigate, by collecting existing data, and, when necessary, conducting new studies, every petition or recommendation made under (a)(2), (3) or (4) of this section to the extent practicable within the time available and provide the following information:

(1) the concentration of the species to be affected and carrying capacity of the area to be affected;

(2) the current hunting practices in the area, including numbers of animals taken and by what methods and means and whether the take is subsistence or recreational;

(3) the dependence of persons in the area for subsistence use of a species;

(4) the population trends of the affected fish and game in the area;

(5) whether the affected fish and game population is able to support a nonsubsistence harvest; and

(6) other information considered necessary by the section of subsistence hunting and fishing.

Sec. 10. AS 16.05.257(h)(1) is amended to read:

(1) "subsistence hunting" means the taking of game animals by a state resident for subsistence uses by means defined by the Board of Game;

Sec. 11. AS 16.05.257(h)(2) is repealed and re-enacted to read:

(2) "subsistence hunting area" means an area in which only subsistence hunting of the affected species is permitted and which is managed for maximum food potential.

Sec. 12. AS 16.05.257 is amended by adding a new subsection to read: (i) The Board of Game may make no decision denying, creating or changing a subsistence hunting area unless based on specific written findings of fact regarding all the information provided in accordance with (e) of this section.

Sec. 13. AS 16.05.930 is amended by adding a new subsection to read: (e) This chapter does not prevent the traditional barter of fish and game taken by subsistence hunting or fishing, except that the commissioner may prohibit the barter of subsistence-taken fish and game by regulation, emergency or otherwise, if a determination on the record is made that the barter is resulting in a waste of the resource, damage to fish stocks or game populations, or circumvention of fish or game management programs.

Sec. 14. AS 16.05.940(17) is amended to read:

(17) "subsistence fishing" means the taking, fishing for, or possession of fish, shellfish, or other fisheries resources for subsistence uses with gill net, seine, fish wheel, long line, or other means defined by the Board of Fisheries;

Sec. 15. AS 16.05.940 is amended by adding new paragraphs to read:

(26) "subsistence uses" means the customary and traditional uses in Alaska of wild, renewable resources

(continued from page 8)

"Be it enacted..."

for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter or sharing for personal or family consumption; for the purposes of this paragraph, "family" means all persons related by blood, marriage, or adoption, and any person living within the household on a permanent basis;

(27) "barter" means the exchange or trade of fish or game, or their parts, taken for subsistence uses

(A) for other fish or game or their parts; or

(B) for other food or for nonedible items other than money if the exchange is of a limited and noncommercial nature.

Approved by the Governor: July 12, 1978

Actual Effective Date: October 10, 1978

Answer the following questions:

1. Whose rights are protected under the state law?
2. State the exact words that show that subsistence use is first.
3. What might these laws have to do with state land disposals?

Subsistence provision—Part I

Is it good law or death knell for sport hunting

(This is the first of a five-part series on the controversial Ballot Measure No. 7 dealing with subsistence hunting and fishing, appearing on the state's Nov. 2 general election ballot. Today, the broad implications of the issue are explored).

By PAUL JENKINS
Associated Press Writer

ANCHORAGE—It's called the "subsistence issue" in polite circles. Elsewhere, it's painted as a conspiracy, an attempt to destroy age-old cultures, and even a ticket to disaster.

The fracas centers on efforts to repeal Alaska's priority subsistence law, which gives rural residents first rights to fish and game. And the fight shapes up as a down-in-the-dirt knuckle-buster over who can hunt and fish, and where.

The weapons? Cash, power and truth, in any of its several forms.

The ammunition? Emotional pleas, warnings of anarchy and the threat of a U.S. government takeover of subsistence hunting and fishing management on more than 200 million acres

of federal land in Alaska.

And there are predictions of the possible destruction of Alaska's fish and wildlife—the fragile lifeline which has carried many of the state's diverse Native cultures into the 20th Century.

Fueled by what some see as subtle racism, the fight could for the foreseeable future alter management of the state's fish and game and access to those resources.

The complexities and passions of the issue are well-known to three men deeply committed to its resolution: sportsmen's leader Sam McDowell, Alaska Federation of Natives (AFN) attorney Don Mitchell and Gov. Jay Hammond.

McDowell: "You won't have any game animals left in the state unless you repeal the state subsistence law. Our biggest adversary is the AFN because it's hired attorneys to write these laws and disenfranchise the people of the state."

Mitchell: "There is a certain fear, because this is such an awfully emo-

(See SUBSISTENCE, page 5)



SUBSISTENCE ISSUE—Caribou like these at Tukuto Lake in the western Brooks Range are only one of the

Alaskan game animals involved in the hotly debated subsistence hunting and fishing issue. (News Miner)

(Continued from page 1)
tional issue, that it's subject to demagoguery by certain members of the community."

Hammond: "It's the most divisive issue facing the state. Now, there are blood oaths on both sides."

The 1978 law guarantees hunting and fishing priorities to Alaskans with customary and traditional dependence on game and fish stocks in their immediate areas for their direct personal, or family, use for food, shelter, tools or handicraft materials.

Scrupulously avoiding race as a criterion for these priorities, it also allows for the use of fish and game in customary trade, barter or sharing for personal or family consumption.

Under guidelines set by the boards of Fisheries and Game, rural residency is the yardstick used to measure subsistence needs. Those guidelines, defining "rural" areas, effectively put about 85 percent of the state's population in urban areas, where residents do not qualify for subsistence hunting and fishing rights.

Depending upon who you talk to, it's either a good law which ensures the survival of residents and cultures in remote areas, or the death knell for sport hunting and fishing on much of Alaska's 375 million acres.

It's either a conspiracy by environmentalists and rural residents to lock up Alaska's wilderness, or protection for those trying to live off the land in the face of a burgeoning urban population with a growing hunger for fish and game.

Both sides agree on one thing: Under the law, the rural populace will be the last excluded from hunting and fishing in Alaska.

The law's opponents, spearheaded by sportsmen's groups, charge the law is unconstitutional and creates two classes of Alaskans for the purpose of hunting and fishing.

They've gathered more than 22,000 signatures to put a question on the November ballot which, if approved, would dump the law and replace it with the Alaska Anti-Discrimination Hunting, Fishing and Trapping Rights Act.

That act, they say, would eliminate distinctions in allocation of wildlife resources, and fish and game man-

agement would return to the discretion of the boards of Fisheries and Game.

Those boards, through regulation, would take care of rural residents' subsistence needs, as before 1978, they say.

Supporters of the subsistence law say those needs were not always protected when consideration of subsistence needs was discretionary.

While many of the statute's supporters say the priority goes into effect only in times of resource shortages, its opponents argue the priority always is in effect, that subsistence allocations must be met before sports or commercial interests can be considered.

State officials tend to agree.

"The subsistence priority is always there," says Miltred Zahn, executive director of the Fisheries and Game Boards. "It would only become visible if resources got to a point where they were limited. As long as there are extra fish and animals, other users will be accommodated."

Fish and Game Commissioner Ron Skeog says the only time there is no subsistence priority regulation is when a species is so abundant it's not regulated.

"If you have an abundance of any animal—butter clams, for instance—there's no subsistence priority regulation," he says. If the animals become regulated, through seasons, for instance, "the restrictions invoke a priority need in regulations."

A number of animals in the Nelchik caribou herd already is set aside for subsistence use. Urban fishermen participating in the Chitina River dip net fishery could feel the sting of subsistence priority if the river is classified a subsistence fishery, Zahn says.

Subsistence fisheries already are established in many parts of the state, and opponents of the law fear as time goes on, subsistence use will squeeze out sportsmen.

However, the law's supporters contend that, for the most part, the subsistence take is small.

Meanwhile, federal officials are watching the battle.

An Alaskan National Interest Lands Conservation Act provision requires the secretary of the U.S. De-

partment of Interior to ensure subsistence rights on U.S. government land in the state.

Currently, the state manages fish and game on federal lands, with federal concurrence.

Federal officials fear that voters on Nov. 2 may force them to assume those responsibilities. There presently are not enough funds or personnel for the job, they say.

Many state officials also are worried, despite Interior Secretary James Watt's pledge that "we can work something out." If the law is repealed.

As one put it: "He would have to enforce it. He doesn't have the right to break the law."

Hammond says the federal's government's most likely response to an allocation problem or a fund shortage would be to close vast areas to all but subsistence uses until it could be worked out.

And that, says Alaska Sen. Ted Stevens, would trigger a nightmare for hunters, fishermen and those charged with enforcing the law.

"We know for a practical matter, there would be anarchy," Stevens says. "It would be an enforcement nightmare, a management nightmare. What's going to suffer is the resource base."

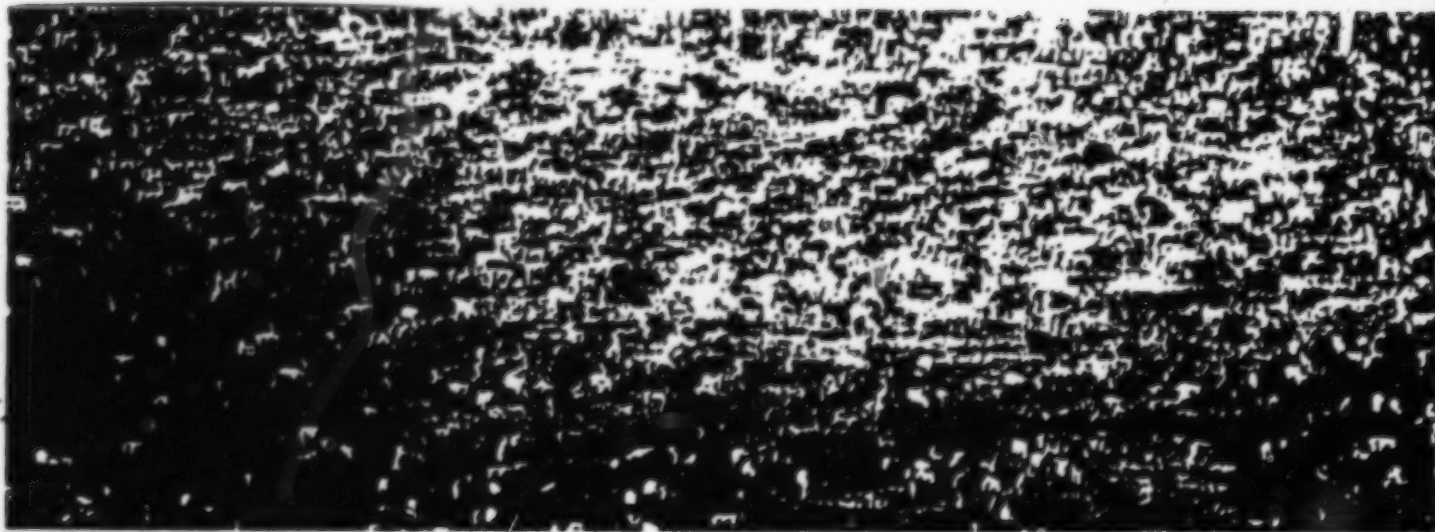
Hammond says that while he believes the state law is poor legislation, he opposes its repeal.

It would, he says, cripple Alaska's game and fish management efforts by forcing a federal takeover of U.S. government lands—creating pockets of state and federal management areas across the state.

The act which would replace the statute could further cripple the state's management efforts, he says.

"It would prevent the state from enacting regulations and it wipes out references to need, income, etc.," he says.

Fairbanks Daily News Miner
September 21, 1982



CARIBOU HERD—A portion of the Western Arctic caribou herd feeds north of the Brooks Range last summer. The hunting restrictions which followed a crash in the herd's population in the mid-1970s was one of the develop-

ments that led to passage of the state's subsistence law in 1978. The herd has since recovered to what game biologists consider a healthy population.

Staff photo by Eric Muehling

'75 game crisis triggered current battles

(This is the second of a five-part series on the state's subsistence hunting and fishing priority law. Alaskans will decide whether it should be repealed when they vote on Ballot Measure No. 7 in the Nov. 3 election. Today a look at the origins of the law.)

By PAUL JENKINS
Associated Press Writer

ANCHORAGE (AP)—Voters will decide in November one of the most divisive issues in state history, an issue spawned by a complex and confusing search for a way to preserve an Alaskan tradition—living off the land.

The subsistence priority law fight centers on whether rural residents will have first opportunity to hunt and fish near their homes, to subsist on the available resources despite competition from a swelling urban population.

Supporters of the law say the loss of that lifestyle would destroy a way of life for many in Alaska, probably the only state where it's still possible to feed entire families year-round on nature's bounty.

While such reliance on wild food is more predominant in rural areas,

substantial numbers of urbanites historically have used fish and game heavily.

Thus, the often almost irrationally bitter conflict is not simply one of sport hunting and fishing vs. a rural, subsistence lifestyle. For many urban Alaskans, the taking of game and fish is important in their lifestyle, too.

Advocates of the law contend repeal would cripple state fish and game management by forcing the U.S. government to ensure subsistence rights on some 70 million acres of federal land in Alaska.

Sen. Ted Stevens says Interior Secretary James Watt would have no other choice because federal law mandates the preservation of the subsistence rights of rural residents.

"Watt doesn't like it. I don't like it. Nobody I know on the federal scene likes it," says Stevens. "But he would be forced to."

Led most vociferously by sportsman Sam McDowell, opponents of the law say the threat of a federal takeover is "hogwash," because the government lacks the resources.

"There's no way the federal gov-

ernment will come in here and take over management of species," says McDowell. "It's contrary to the policies of the Reagan administration."

"It should go back to what it was before 1978—when subsistence was taken care of by the boards of Fisheries and Game."

Gov. Jay Hammond says the law is unworkable, but he's against repeal. He says a lack of federal resources for management could spell trouble for sportsmen trying to use federal lands.

"If you repeal the state subsistence law, the federal government is still obligated," he says. "They might simply slam the door shut."

The problem dates back years. Prior to statehood in 1959, the Alaska Game Commission could only advise the Interior Department on hunting and sport fishing regulations.

The commercial fishery was covered by a separate statute, the White Act, which said it could not be regulated in a manner which would hamper the taking of fish for personal use.

Even after statehood, Alaska was denied authority to regulate fish and game until its management program

was approved by the Interior Department. The state's plan won approval early in 1960, although it contained no subsistence priority provisions.

In the late 1960s, conflicts began building in rural areas as sportsmen used aircraft to travel farther afield.

In 1971, Congress approved the Alaska Native Claims Settlement Act, giving Natives almost \$1 billion and 44 million acres to extinguish aboriginal land claims, and claims based on hunting and fishing rights.

Subsistence protection was not included because the Interior Department already had authority to ensure it on federal lands, and state officials argued it was unnecessary.

The 1972 Marine Mammal Protection Act allowed Alaska Natives to continue to hunt seals, walrus and other protected animals, and the Endangered Species Act of 1973 also included exemptions for Alaska natives and other rural residents.

But in 1975, a game crisis triggered a complex chain of events which brought about the current subsistence fight. The Western Arctic caribou

(See SUBSISTENCE, page 6)

SUBSISTENCE

(Continued from page 1)

herd "crashed"—plummeting from 242,000 animals in 1970 to about 65,000.

The state quickly set an annual harvest limit of 3,000 bulls from the herd in an effort to meet subsistence needs but still protect breeding animals enough for recovery.

A state review of the situation became ammunition for opponents of the subsistence law. It said the wastage of caribou in 1975-1976 in an area hunted primarily by Natives was "of such magnitude that it could not be justified or tolerated biologically, socially, morally or ethically."

It said the waste included animals killed mistakenly, animals left to rot, animals used for trap bait, and animals killed for fun.

"The Natives shot them by the thousands," McDowell says. "You won't have any game herds in the state unless you repeal the state subsistence law."

But repeal opponents say the cause of the decline in the herd is unknown.

"Biologists said they did not have the slightest idea what happened," says Alaska Federation of Natives attorney Don Mitchell. "There were no restrictions on hunting that herd and it was not being monitored. If the herd had been managed, the herd might not have crashed. It was not overhunting alone which caused the crash."

Hunting of the herd was limited to villages which normally harvested from it, and permit priorities were established among even subsistence users in those communities. Criteria included community resources and availability of other food sources.

Some sponsors of the current repeal effort sued to invalidate the guidelines, claiming they were adopted illegally and exceeded the authority of the Board of Game—that the setting of priorities among Alaskans violated Alaska's Constitution.

The pertinent clause is Section 3, Article VIII: "Whenever occurring in the natural state, fish, wildlife and waters are reserved to the people for common use."

"They did not want the precedent of when allocation decisions are made, that they be made to communities and people must dependent on the resources," Mitchell said of the lawsuit's sponsors.

In 1977, Fairbanks Superior Court Judge James Blair invalidated the program, saying the board probably had no authority to allocate wildlife.

The Supreme Court—without addressing the constitutionality of allocation—said the regulations were adopted in violation of state procedures.

Meanwhile, the subsistence issue surfaced in Congress. Rep. Morris Dail, D-Ariz., introduced what could become the Alaska National Interest Lands Conservation Act (ANILCA). It contains provisions to protect the subsistence lifestyle of rural Alaskans. A bill introduced by Stevens also gave subsistence uses special consideration.

In 1978, the Legislature passed the state subsistence priority law, a measure similar to those being considered in Congress.

Opponents say lawmakers were impeded by promises that if Alaska could adopt the law, similar federal provisions could be avoided.

The law says, basically, that subsistence users have priority when there are restrictions on the harvest of fish or game. It also contains provisions to choose among subsistence users when further restrictions are needed.

They include local residency, availability of other resources and customary and direct dependence on fish or game for a user's livelihood.

It also sets out methods for the boards of Fisheries and Game to turn areas into subsistence-use-only zones.

"It makes it very clear that the state of Alaska will not condone commercial or sport take above the needs of those people who need that resource for their food," says state Sen. Nels Anderson of Dillingham, who was instrumental in the law's adoption.

But despite state law and lobbying efforts to head off a subsistence provision in ANILCA, Congress included subsistence protection in the 1980 federal law.

Alaska retained fish and game management rights on all land in Alaska, including federal holdings. But before it could assume those responsibilities it had to bring state law into compliance with federal law—which specifically restricted subsistence use to rural residents.

Under ANILCA, if those conditions are not met, the Interior Department is directed to assume those responsibilities on federal land.

The boards of Fisheries and Game moved to bring the state into compliance with eight criteria to identify "customary and traditional" subsistence uses by rural Alaskans, and mandating that only rural residents could qualify.

To qualify as a subsistence user a person would have to live in a rural area, defined as an area outside the road system of a borough, municipality or other community with a population of 7,000 or more.

Excluded from subsistence hunting and fishing were about 85 percent of the state's residents.

And the fight was on.

VII—Wednesday: The argument for the law.

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Subsistence provision—Part III

Proponents speak of 'preserving a way of

This third of a five-part series on the state's subsistence law today explores the arguments of those who favor retaining the statute. One of the most divisive issues facing Alaskans, repeal of the subsistence law will be before voters as Ballot Measure No. 7 in the Nov. 2 state election.

By PAUL JENKINS
Associated Press Writer

ANCHORAGE (AP)—Backers of the state's priority subsistence law say its repeal would crush a fragile link with Alaska's past, severing a lifeline that has kept a primitive culture afloat in a sea of change.

Those fighting to retain the law

stress its importance to cultural and nutritional needs and warn that its repeal would open the door to federal interference in the management of the state's fish and game resources.

Governors past and present, members of the state's congressional delegation, business and union leaders, and key figures of the Native community are among the legion of vocal supporters.

For some rural Alaskans, living off the land by net and by gun is a matter of economics. For others it's a vital tie to the past, a way of keeping a culture alive.

Former Gov. Bill Egan says repeal

of the law would have far-reaching implications in rural Alaska.

"It would eat into the hard core of the cultural background and present-day culture of not only the Natives, but the non-Natives as well," he says. "If more could visit these villages, most would get a different idea that there is a culture going on out there that we should be proud of."

The crux of the fight? Urban hunters and fishermen are ranging farther afield in search of fish and game, and many Bush residents fear Mother Nature's larder at some future point may not hold enough for everyone.

"We believe that the current state

law should be retained because it provides all Alaskans with an equal opportunity to live off the land, which is an option only available in Alaska," says Native banker Willie Hensley.

"We believe the proponents of the initiative are intent on destroying a way of life which has served as the foundation from which all Alaska history has sprung."

Gov. Jay Hammond puts it this way: "It's terribly unfortunate. It's one of the most regrettable and debilitating things to hit the state."

Another opponent, U.S. Sen. Ted Stevens, fears "anarchy" if the law is repealed. U.S. Rep. Don Young says

dumping the law "would be disastrous for the state."

Clem Tillion, Hammond's director of the Office of International Fisheries and External Affairs, says he could support the repeal of the current law, but is against the ballot question because it also would set in place the Alaska Anti-Discrimination Hunting, Fishing and Trapping Act.

The act would prohibit any kind of discrimination in the allocation of wildlife resources.

"That absolutely violates the agreement with the federal government," he says. "The passing of it may vent somebody's spleen, but it's

like shooting at someone from the other side of your head."

Alaskans for Sensible Game Management, an organization headed by Hensley, is in the forefront of the fight to defeat the ballot measure to be voted on Nov. 2.

The group has gathered about \$150,000—much of it from Native corporations—and assembled a "Blue Ribbon Committee" to fight repeal.

The group's coordinator, Anchorage Assemblywoman Jane Anvik, says a voter registration drive is under way in remote areas, and an educational campaign aimed at

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VII-24

Subsistence provision—Part IV

Opponents claim law is discriminatory

(Alaskan voters will decide Nov. 2 whether a state law setting a subsistence priority should be repealed. This fourth of a five-part series examining issues surround Ballot Measure No. 7 looks at the arguments of those favoring repeal.)

By PAUL JENKINS
Associated Press Writer

ANCHORAGE (AP)—Those who would repeal Alaska's subsistence priority hunting and fishing law get right to the point. They say—as often and as loudly as they can—that it's unnecessary, unfair and unconstitutional.

They are as vehement as those they

call "the other side." That means rural residents. Under law and the regulations adopted to implement it, no urban dweller can qualify as a subsistence user.

Much of the dispute stems from sharply differing opinions as to what constitutes subsistence. Opponents of the law don't see why the urban dweller who feeds his family on fish and game shouldn't have the same opportunity to hunt and fish as rural residents.

"When a guy out there in the Bush can feed his dogs before I feed my child at the dinner table—that's got to stop," says Dave Stancliff, Anchor-

age coordinator for Alaskans for Equal Fishing and Hunting Rights, the group spearheading the repeal effort.

And he says the Alaska Constitution backs him up, citing Section 3, Article VIII: "Whenever occurring in the natural state, fish, wildlife and waters are reserved to the people for common use."

Opponents of the 1978 law say it also takes management of the state's fish and wildlife from the hands of professionals and gives it to judges.

Despite charges that they are dividing the state and inviting a federal takeover of fish and game manage-

ment on federal lands in Alaska, they want legitimate subsistence needs met through regulation, rather than law.

They say the boards of Fisheries and Game have protected and could continue to protect subsistence needs in rural Alaska adequately through tailor-made rules: restrict modes of transportation, lengthen seasons, order late openings and liberalize bag limits in rural areas.

Besides repeal of the subsistence law, they seek adoption of the Alaska Anti-Discrimination Hunting

(See SUBSISTENCE, page 2)

SUBSISTENCE . . .

(Continued from page 1)

Fishing and Trapping Act, which would give all state residents equal access to fish and game.

"The current law is totally discriminatory," says state Rep. Ramona Barnes, an Anchorage Republican who unsuccessfully led a legislative fight to amend the existing statute.

"You can in fact make \$100,000 a year and qualify for subsistence, but the people who live in Anchorage, Fairbanks, Juneau and Ketchikan are excluded from using those same resources if they make \$10 a year," says Barnes, whose husband is a fishing guide.

Other supporters of repeal include three out of four gubernatorial candidates, current and past legislators and many in the fish and wildlife management community.

Republican gubernatorial candidate Tom Fink voiced strong opposition to the subsistence priority law as he trampled Lt. Gov. Terry Miller in the Aug. 24 primary election.

"I would say it's a divisive issue, but I think the 1978 law is divisive," says Fink.

Fink's upset victory over Miller—a supporter of the statute—caused considerable speculation about how much his opposition to the law played in the outcome, if any.

"I'm opposed to it because it unnecessarily divides the state in a very arbitrary manner in an area where we had no problem prior to 1978," says Dick Randolph, the Libertarian candidate. "I think that the law . . . is unconstitutional and its arbitrariness is extremely unfortunate."

The Democratic candidate, Bill Sheffield, supports the law, while Joe Vogler, Alaska Independence Party candidate, favors repeal.

While opponents of repeal claim it would force Interior Secretary James Watt to take over management of subsistence hunting and fishing on federal lands in Alaska, Watt's recent visit to Anchorage left many wondering.

Watt said he must uphold provisions in the Alaska National Interest Lands Conservation Act mandating subsistence rights on federal lands, but he also met with Fink and said he supports Fink's candidacy.

"We'll be able to work something out," Watt said. "We're not going to move in here with marshals and the National Guard."

Fink says Watt supports local control of fish and game, and "in my opinion, he wouldn't do any more than he had to do."

Stanciliff's group and the Fairbanks-based Citizens for Equal Hunting and Fishing Rights have raised about \$100,000 to promote repeal, but Stanciliff says it will take about \$300,000 to win the hearts and votes of the electorate.

Their critics suggest repeal forces are set on a course which could have far-reaching effects on rural Alaskans' ability to survive, and, in essence, destroy a traditional way of rural life.

"Customary and traditional? That doesn't mean snow machines, air-

Stanciliff says the organizations' problem with current law is that it's based primarily on residency.

"This organization never has, nor will it ever, object to subsistence lifestyles," says Stanciliff. "What we object to is inequality in the law."

"We feel we're the best friend the rural Alaskans have. We want nothing for ourselves, we just want equality for Alaskans. We recognize they are entitled to fish and game, but they are not entitled to take over management," adds McDowell. "We are against anyone being able to override professional management."

Stanciliff and others claim the law preserves the lifestyle of rural Alaskans at the expense of many urban residents whose own lifestyles revolve around hunting and fishing.

Subsistence law supporters argue that if urban residents want to live off the land, they can move to the Bush.

"If that law stands, then it follows there should be a law requiring that when rural residents move into urban areas, they should have to stand in line behind urban residents for services," Stanciliff says. "They should not be able to shop until we're done shopping, or get gasoline until we've filled our cars."

Fink has other objections:

"We've only had the law since 1978, and nobody destroyed their lifestyle before then. I believe the number of people who truly live that lifestyle I can count on my fingers and toes. The person who lives totally on fish and game outside the cash economy doesn't exist."

He also sees the issue as something spawned and supported by environmentalists who want to restrict access to Alaska's wilderness.

"They could deny construction permits because of possible effects on subsistence," he says. "Anyone who has a claim of subsistence could tie up any proposed construction for five years."

Rep. Don Young agrees with Fink on the alleged role of environmentalists, but he says he is against repeal to keep the federal government out of Alaska.

While rejecting claims that their fight smacks of racism, repeal advocates contend Native corporations threw large sums of money into the fight for subsistence rights in federal law, even after the state law was adopted.

Study cites 'self-limiting' factors in Bush

By FRED PRATT
Staff Writer

Subsistence hunting and fishing by rural residents is self-limiting, but the limiting factors do not work when commercial markets come into play, two researchers said Saturday.

Robert J. Wolfe and Steven R. Behnke, both employees of the Fish and Game Department Subsistence Division, presented results of three years of research to the Alaska Science Conference here.

Wolfe works in Bethel and presented data collected from six Yukon River Delta villages. Behnke works in Dillingham, and collected information from Nondalton.

Both said their evidence shows the subsistence take of families in the villages is limited not by the families' ability to hunt and fish, but by their ability to process and store the food.

Subsistence hunting and fishing forms "a local economy of concrete and limited objectives," Wolfe said.

Wolfe's data on the Yukon Delta villages showed what an average family took in salmon and five game food sources. While the same fisherman would take salmon both for sale and

for family use, Wolfe separated the commercial and subsistence catch by taking what the family used itself out of the total salmon catch.

Thus the commercial salmon catch shown in Wolfe's figures fluctuated with salmon runs and market conditions, while the subsistence portion stayed roughly the same.

"The subsistence salmon is limited solely to the needs of the household," he said. "The commercial markets are potentially limitless. There is not the self-restraint system in commercial salmon that one sees in subsistence salmon."

When asked about instances of wanton waste by rural hunters, Wolfe said all such examples were cases of commercial hunting for meat that was to be sold.

"The people out there are no better or worse than we are," he said. "There probably are examples of wanton waste, but not in the whole system."

Any system has instances of waste, Behnke said, giving the examples of flaring of natural gas or waste associated with large-scale modern agriculture.

Asked about the impact of passage

of Proposition 7 and repeal of the state subsistence law, Behnke said, "If you want efficient management of a critical resource, it makes sense to involve the local people existing on that resource. The law is one of the ways of doing that, and if you get rid of it you're telling people, 'You're not part of that.'"

Passage of Proposition 7 would be "a major setback," Behnke said.

The two stressed "self-limiting factors" in their paper.

Wolfe pointed out that having six wildlife food sources spreads the dependence of a subsistence family and is "more likely to lead to sustained yields over the long term."

Behnke presented figures for families in Nondalton that also showed how the ability to process and store fish limits the subsistence catch. Behnke's fishing schedule of a typical family shows they would fish for several days and then pull in their nets while they caught up on the cleaning and drying work.

"This household could potentially have taken thousands and thousands of fish, but it was limited by its own needs and the size of its smokehouse," he stressed.

They also presented figures on hunting success which show that a minority of hunters provide a community with the majority of big game.

Over a three-year period in Nondalton, between 40 and 60 percent of the families took no moose, Behnke said. During the same period 35 to 40 percent of the families got no caribou.

Wolfe and Behnke explained that the "labor and monetary costs" of hunting moose and caribou are high, compared with salmon. In Nondalton a typical family would take between 4,000 and 5,000 pounds of meat from all sources, and salmon would make up 2,500 to 4,000 pound of that.

"Contrary to belief, the dependence on subsistence does not decrease with the amount of money a person earns," Wolfe said. "The households that make the most money also have the highest take."

The study was suggested by a Canadian researcher who concluded that harvest levels of subsistence families there were below "ecologically limiting levels" because of customary laws and because food was taken for "use value" rather than "exchange value."

And what if the law is repealed?

What happens after Alaskans cast their votes Nov. 2 on the subsistence law? This final segment of a five-part series on the controversial subsistence priority law explores that question. Voters will decide on Ballot Measure No. 7 whether the existing law shall remain or be repealed.

By PAUL JENKINS
Associated Press Writer

ANCHORAGE (AP)—Federal officials are worrying, planning and keeping a low profile on the sidelines as opposing forces slug it out in the fight over whether to repeal Alaska's subsistence priority law.

(Former Game Division head Bob Rausch and Native leader Willie Hensley will debate the subsistence issue in a call-in program to be televised statewide Monday. Fairbanksans can watch it Monday at 7 p.m. on KTVF, Channel 11.)

If the law is dumped in November and replaced with the Anti-Discrimination Hunting, Fishing and Trapping Rights Act, federal officials will be faced with the awesome prospect of enforcing a federal subsistence priority on more than 200 million acres of U.S. government land in the state.

The agency which would bear the brunt of enforcing the priority is the

U.S. Fish & Wildlife Service, headed in Alaska by Keith Schreiner.

Schreiner can't preach quickly enough the federal government's position in the ongoing subsistence battle.

"We don't want the job," he says. "We want the state to handle the subsistence area. We cannot do the job as well as the state. They have more men, money and professionals. The resources could suffer.

"If we could do it as well as the state, I wouldn't be so worried. It's traditionally been—and should remain—the responsibility of the state. It would be just one more form of federal pre-emption."

"I'm convinced the secretary (Interior Secretary James Watt) will do what he always said he'll do—enforce the law to the best of his ability. The reason I'm convinced is that he has no alternative."

The unwelcome specter of federal intervention in Alaska has been used with glee and abandon by those who favor the current law giving rural Alaskans first opportunity at fish and game.

They warn that the federal government—faced with money, manpower or management problems—might shut down vast areas except to subsistence hunting and fishing.

Those seeking to repeal the law are

undaunted. They insist Interior Secretary James Watt has promised several people privately in Alaska that he would handle the state with a gentle hand if the law is repealed. And they say the takeover threat is idle, that the federal government doesn't have the resources to make subsistence rights stick on its lands.

Each side may be right.

Schreiner in recent weeks has been meeting quietly with officials in Washington, D.C., to develop plans necessary to implement a subsistence management program in Alaska—just in case.

Bill Horn, Department of Interior undersecretary, said the agency, under the Alaska National Interest Lands Conservation Act (ANILCA), has no choice in the matter.

If approved by voters, the new state law would bar preferences to fish and game allocations, including a subsistence priority.

Horn says the federal government must move to ensure those rights on its lands.

There are several options, from trying to enforce the state's current program on federal lands to more drastic measures, he says.

"Closure certainly is one option," Horn says. "But we could also close areas to subsistence use, but we think we can avoid that kind of blunderbuss approach."

He says the federal government probably won't have a contingency plan ready by the Nov. 2 election, but "we'll be able to move extremely fast to meet our obligations."

Schreiner's agency, with 300 personnel and a \$15.6 million budget last year in Alaska, fields about 10 law enforcement agents in the state. Of its budget for Alaska last year, only \$600,000 went to law enforcement.

Schreiner says closure might be one alternative, "but it's not the best in my mind—you still have to enforce it."

However, Schreiner says his agency will do the job, if necessary.

"I don't think there ought to be a doubt in anybody's mind," he says. "Anybody who thinks my agency will walk away is crazy as a herring—and they're buying trouble."

But he says he's a realist. Many of his personnel "may have to get trained in a hurry" if voters repeal the state law, and they might need reinforcements. How many, he's not sure.

Among the alternatives under consideration is the possibility of contracting with Alaska to enforce the law on federal lands, but he acknowledges the state would have no incentive to undertake such a program, and "frankly, that's a worrisome problem."

Gov. Jay Hammond, in the midst of an offensive to retain the state's law, hints that federal intervention on Alaska lands might be only one of the consequences of a repeal.

He says native corporations could move to shut down their 44 million acres to sports hunting and fishing.

Native corporations, barred from setting seasons and bag limits on their land's fish and game, can close their vast holdings, putting millions of acres off limits to sport hunters and fishermen, says Hammond.

However, Sen. Frank Ferguson, D-Kotzebue, says while it could happen, he has not heard it discussed in the Native community.

"Maybe individual corporations would do it, but I don't think it would be universal," says Ferguson, president of the Alaska Federation of Natives.

STATE LAND DISPOSAL

LESSON 3: Proposed Settlements: The Potential Impacts

Time: One or two class periods.

Objectives:

The students will be able to identify potential land use conflicts by reviewing map overlays of Bristol Bay.

Procedures:

1. Project the settlement overlays: "Land Status" and "Existing Communities and Remote Settlement Proposals." Have the students determine which potential State land disposals may affect their area. Note that proposed State land disposal (on the "Existing Communities..." overlay) shows the projected acreage for each disposal.
2. Read the text and enclosed EPA xerox explaining environmental impact statements.
3. Using both student knowledge of the area and the maps (p. 18 and p. 20 of Volume 1: Resource Inventory done by the BBCMP) showing fish and game habitat, identify potential conflicts. Have the students be specific and identify what conflicts may arise with what wildlife and/or fish species. Have the students examine the overlays and mark on their (acetate) map areas of potential conflict. (Use the sub-regional map of your area [1:250,000] or the village [1:63,360].)
4. Have students list out possible impacts. This could be done in small groups or as a whole class. Students may need examples of the various factors that cause impacts.
5. Aid students in completing a "force field analysis," (See Student Activity Sheet.).

ENVIRONMENTAL IMPACT STATEMENT

An Environmental Impact Statement is an anticipated guess at what might happen to an area if a certain change takes place. The Bristol Bay Cooperative Management Study Group hired a researcher at the University of Alaska to develop the Environmental Impact Statement. Steve Langdon was the main writer. Steve Langdon is a specialist in social and environmental studies. Although Steve is familiar with Bristol Bay, its people and land, and an excellent researcher, he is not from here and does not have the intimate knowledge of the environment that you do. You can "discover" other impacts that Steve and the State may fail to see because they do not have your knowledge. Both State and Federal guidelines and law recognize local knowledge on these matters. If a State land disposal is subject to occur in your area, representatives will come to your village to gather information on how a land disposal will impact you.

The more you are able to gather information and use it to protect valuable resources, the more chance you have to safeguard your future.

When Steve made his study he was concerned about the number of new persons coming into an area; how much they would use existing resources; how much money they would add to a region; how concentrated these settlements would be; and how close they are located to prime fish and game habitat. In general, Steve found that resources such as moose and caribou would become scarce. He states:

State land disposals will increase the pressure on renewable resources presently utilized for subsistence and recreation by residents of the BBCMP areas, other Alaskan residents, and non-Alaskan residents. The two resources likely to experience the greatest additional demand are moose and caribou.

Consequently, the demand placed on moose by State land disposal-created households will accelerate the decline of resident per household harvest of moose. Although it is nearly impossible to project the status of the moose population in 1990 when the impacts of state land disposals are assumed by the BBCMP study group to begin, it does not seem likely that the number of moose would increase sufficiently to alter the shortage implied by settlement population.

Caribou present a somewhat different picture due to the present health of the two herds in the BBCMP area. However, as noted in the BAU projection, household demand at present levels in conjunction with projected population growth from within the region and stable harvests by other Alaskans and non-Alaskans would probably match the sustained yield harvest level being

taken from the two herds in 1990, even if the present healthy population persists. Since state land disposal impacts are assumed to begin in 1990, additional demand for caribou from these households will likely result in a declining subsistence caribou harvest per household after 1990.
(Steve Langdon)

This may mean that after additional people move to Bristol Bay, existing pressures on moose and caribou will increase. The population of these species may decline as a result.

United States
Environmental Protection
Agency

September 1977



In Productive Harmony

A brief explanation of
environmental impact
statements

How It Started

On January 1, 1970, the President signed into law the National Environmental Policy Act (NEPA), which declared a national policy to encourage productive and enjoyable harmony between man and his environment.

In signing the bill, the President remarked that it was particularly fitting as his first official act of the new decade not only because it gave disparate Federal environmental efforts organization and direction, but because, "the 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment. It is literally now or never."

NEPA established in the Executive Office of the President a Council on Environmental Quality (CEQ), charged with responsibility to study the condition of the Nation's environment, to develop new environmental programs and policies, to coordinate the wide array of Federal environmental efforts, to see that all Federal activities take environmental considerations into account and to assist the President in assessing environmental problems and in determining ways to solve them.

To ensure that environmental amenities and values are given systematic consideration equal to economic and technical considerations in the Federal decision-making process,

NEPA requires each Federal agency to prepare a statement of environmental impact in advance of each major action, recommendation or report on legislation that may significantly affect the quality of the human environment. Such actions may include new highway construction, harbor dredging or filling, nuclear power plant construction, large-scale aerial pesticide spraying, river channeling, new jet runways, munitions disposal, bridge construction and more.

What is an Environmental Impact Statement?

An environmental impact statement is the heart of a Federal administrative process designed to ensure achievement of national environmental goals. *Each statement must assess in detail the potential environmental*

impact of a proposed action, and all Federal agencies are required to prepare statements for matters under their jurisdiction.

As early in the decision-making process as possible, and in all cases prior to agency decision, an agency prepares a *draft* statement for review by appropriate Federal, State and local environmental agencies as well as the public. After comment from the agencies and interested parties, the statement is prepared in final form, incorporating all comments and objections received on the draft and indicating how significant issues raised during the commenting process have been resolved. Both draft and final statement are filed with CEQ and made available to the public.

Impact statements are popularly called E.I.S.'s (Environmental Impact Statements).

Purpose of the Statement

The statement's primary purpose is to disclose the environmental consequences of a proposed action, thus alerting the agency decision-maker, the public and ultimately Congress and the President to the environmental risks involved. An important and intended consequence of this is to build into a Federal agency's decision-making process a continuing consciousness of environmental considerations. This, in turn, ensures to the fullest extent possible that the agency directs its policies, plans and programs so as to meet national environmental goals.

What Actions Must Statements Cover?

The actions for which agencies must prepare impact statements must be "major" and "environmentally significant," such as:

1. Agency recommendations on their own proposals for legislation.
2. Agency reports on legislation initiated elsewhere but concerning subject matter for which the agency has primary responsibility.
3. Projects and continuing activities which may be
 - a. undertaken directly by an agency;
 - b. supported in whole or in part through

- Federal contracts, grants, subsidies, loans or other forms of funding assistance; or
- c. part of a Federal lease, permit, license, certificate or other entitlement for use.
- 4. Decisions of policy, regulation and procedure-making.

All of the following actions are considered major and/or environmentally significant.

1. Actions whose impact is significant and highly controversial on environmental grounds.
2. Actions which are precedents for much larger actions which may have considerable environmental impact.
3. Actions which are decisions in principle about major future courses of action.
4. Actions which are major because of the involvement of several Federal agencies, even though a particular agency's individual action is not major.
5. Actions whose impact includes environmentally beneficial as well as environmentally detrimental effects.

Contents of the Statement

Each environmental impact statement must include:

1. A detailed description of the proposed action including information and technical data adequate to permit a careful assessment of environmental impact.
2. Discussion of the probable impact on the environment, including any impact on ecological systems and any direct or indirect consequences that may result from the action.
3. Any adverse environmental effects that cannot be avoided.
4. Alternatives to the proposed action that might avoid some or all of the adverse environmental effects, including analysis of costs and environmental impacts of these alternatives.
5. An assessment of the cumulative, long-term effects of the proposed action including its relationship to short-term use of the environment versus the environment's long-term productivity.

6. Any irreversible or irretrievable commitment of resources that might result from the action or which would curtail beneficial use of the environment.

A *final* impact statement must include a discussion of problems and objections raised by other Federal, State and local agencies, private organizations and individuals during the draft statement's review process.

What Does a Statement Look Like?

An environmental impact statement varies in length according to the complexity of the proposed action under review. Each statement ordinarily is introduced by a summary sheet suggesting the nature of its contents; e.g.:

Environmental Impact Statement

Draft _____ Final _____

Name of responsible or principal agency and appropriate operating division.

1. Administrative action _____
Legislative action _____

2. Brief description of action, indicating States and counties particularly affected.

3. Summary of environmental impact and adverse environmental affects.

4. List of alternatives considered.

5. For *draft* statement, a list of all Federal, State and local agencies from which comments have been requested.

For *final* statement, a list of all Federal, State and local agencies and other sources from which written comments have been received.

6. Dates draft and final statements are filed with CEQ and made available to the public.

When is a Statement Prepared?

A draft statement must be prepared and circulated for comment at least 90 days before the proposed action. A final statement must be made public at least 30 days before the proposed action. Any agency unable to meet these requirements must consult with CEQ.

Each agency must identify at what stage or stages in a series of actions relating to a particular matter, that an environmental impact statement will be prepared. Often it may

be necessary to write a statement both in the development of a national program and in the review of proposed projects within a national program. A duplicate clearance process is not always mandatory, but when actions being considered differ significantly from those that have been reviewed already, a new statement should be written.

It is the responsibility of each agency to obtain views of other agencies and interested parties at the earliest feasible time in the development of program and project proposals.

To the maximum extent practicable, impact statements must be prepared for continuing major Federal actions significantly affecting the environment even though they arise from projects or programs initiated prior to enactment of NEPA. Where it is not practicable, it is still important that further incremental actions be shaped to minimize adverse environmental consequences and to account for environmental consequences not fully evaluated at the outset of a project or program.

The greatest use should be made of existing interagency and intergovernmental review procedures.

How Does an Agency Prepare a Statement?

NEPA directs each agency to establish procedures for dealing with environmental impact statements, those prepared inhouse and those reviewed for comment.

Agency procedures must:

1. Identify those agency actions requiring environmental statements.
2. Designate the appropriate time prior to decision to seek comments of other agencies.
3. Describe the mechanisms through which statements are to be made available to the public.
4. Specify general methods for obtaining information required in the preparation of a statement.
5. Designate officials responsible for statements.
6. Establish patterns for consulting with and taking into account the comments of other agencies, particularly EPA.
7. Provide for timely public announcement

of plans and programs with environmental impact.

NEPA goes a step beyond requiring new actions to be environmentally sound by directing all Federal agencies to review their present statutory authority, administrative regulations and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the Act. Still further, agencies must propose "such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes and procedures set forth in this Act."

In other words, agencies must not only begin to meet NEPA requirements for decisions yet unmade, but must seek to realign their standard operating procedures with national environmental goals.

Who Reviews Each Statement?

NEPA requires each Federal agency to "consult with and obtain the comments of any other agency (including State and local as well as Federal) which has jurisdiction by law or special expertise with respect to any environmental impact involved" in an impact statement.

In its guidelines for preparing statements, CEQ lists the agencies which must be consulted on this basis in the following areas:

- air quality and air pollution control
- weather modification
- environmental aspects of electric energy generation and transmission
- natural gas energy development, generation and transmission
- toxic materials
- pesticides
- herbicides
- transportation and handling of hazardous materials
- coastal areas: wetlands, estuaries, waterfowl refuges and beaches
- historic and archeological sites
- flood plains and watersheds
- mineral land reclamation

- parks, forests and outdoor recreational areas
- soil and plant life, sedimentation, erosion and hydrologic conditions
- noise control and abatement
- chemical contamination of food products
- food additives and food sanitation
- microbiological contamination
- radiation and radiological health
- sanitation and waste systems
- shellfish sanitation
- transportation and air quality
- transportation and water quality
- congestion in urban areas, housing and building displacement
- environmental effects with special impact on low-income neighborhoods
- rodent control
- urban planning
- water quality and water pollution control
- marine pollution
- river and canal regulation and stream channelization
- wildlife

The guidelines also require draft statements to be made available for public comment. Many individual agency procedures allow for direct solicitation of such comments from interested parties and private organizations.

If an agency is in doubt as to the proper recipients of its request for comments, CEQ will advise on an appropriate routing.

The Role of CEQ

CEQ is the central Federal force behind the impact statement process. CEQ assists other agencies whenever and wherever necessary in determining the applicability of NEPA to agency actions and in promulgating agency procedures to meet NEPA requirements. CEQ also assists in resolving any conflicts that may arise.

The Council's role is a coordinating one; it is not a commenting agency in the sense that its comments are attached to impact statements. Thus no inference of either approval or disapproval is to be drawn from CEQ's failure to comment on either draft or final statements.

As long as a statement is made available to CEQ, that agency will be able to fulfill its role of internal adviser to the Executive Branch and to the President as contemplated by NEPA.

CEQ's guidelines for preparing E.I.S.'s on proposed Federal actions affecting the environment were issued Aug. 1, 1973 in the Federal Register.

The Role of EPA

EPA reviews environmental impact statements touching any aspect of its responsibilities centering around air and water pollution, drinking water supplies, solid waste, pesticides, radiation and noise. In addition to reviewing statements filed by Federal agencies, EPA frequently reviews statements filed by States and other jurisdictions as a technical service.

Periodically, EPA lists in the Federal Register statements it has reviewed and commented on, coding the nature of its comments. The code generally indicates endorsement of the proposed action, request for more information to determine environmental damage or objection to the action on environmental grounds.

EPA's obligation to review proposed Federally supported actions extends beyond that of other agencies because of its role as the principal Federal regulator of pollution control matters.

Under Section 309 of the Clean Air Act, EPA must "review and comment in writing on the environmental impact" of any legislation, action or regulation proposed by any Federal agency if it affects matters related to EPA's jurisdiction. If EPA determines that any proposed activity is unsatisfactory from the standpoint of public health or welfare or environmental quality, that determination must be published and the matter referred to CEQ.

EPA notifies the public of these comments in the same manner that notification is made of comments on impact statements. Generally, EPA has no authority to stop a project sponsored by another Federal agency; it acts only in an advisory capacity to other agencies, CEQ and the President.

Impact Statements and the Public

The impact statement procedure affords the public an opportunity to participate in Federal decisions that may affect the human environment. Each draft statement must be made public by the responsible agency at the time it is circulated for comment, a date not less than 90 days before the proposed action. Comments must be made available also, and the final statement must include a discussion of the objections and problems raised in comments on the draft. The final statement must be made public at least 30 days prior to the proposed action.

Statements are announced in the Federal Register, although many agencies have supplementary procedures to reach interested citizens. EPA, for example, generally notifies the press (1) when a decision is reached to issue an impact statement, (2) when a draft or final statement is prepared and (3) when comments on other agencies' statements are issued. Interested parties may view EPA's own impact statements or EPA's comments on the statements of other agencies by contacting EPA headquarters in Washington, D.C. or any of its ten regional offices. The agency welcomes public comment.

EPA does not distribute impact statements prepared by other agencies. These are available directly from the agencies bearing primary responsibility.

Interested people may submit comments to agencies on any impact statement issued by them. If an individual believes a *draft* statement to be inadequate, he may offer written comments on the *draft*. If he believes the disposition of his comment in the final statement to be inadequate, he may so notify the agency involved and inform CEQ. In addition to these mechanisms for public participation, many agencies provide for public hearings not only at various stages during the performance of their statutory missions but during the impact statement process itself.

The importance of the role citizens play in the impact statement process has been recognized by the courts. In many cases, the courts have upheld the right, or standing, of citizens to sue on environmental grounds.

Impact Statements and the Courts

Since NEPA went into effect Federal courts have increasingly given more substance to the law's requirement for environmental impact statements. Suits charging violation of that section have dealt essentially with two significant questions: (1) whether a Federal agency should be required to write impact statements; (2) to what extent courts should review the content of statements already written.

Cases have been filed in widely varying situations. *Calvert Cliffs (Md.) Coordinating Committee vs. AEC* was an early landmark case which set the direction of Federal agencies' NEPA responsibilities. The AEC was required to revise its activities to systematically analyze environmental impacts. Since then, Courts have handed down numerous decisions expanding Federal agency responsibilities under NEPA. Two important decisions indicate how courts have dealt with NEPA interpretations.

Ely vs. Velde, decided by the U.S. Court of Appeals for the Fourth Circuit required the Law Enforcement Assistance Administration of the Department of Justice to prepare an impact statement in approving Federal funds for construction of a prison reception and medical center in Virginia. The court took account of "LEAA's overall involvement in the promotion and planning of the Center, as well as the cumulative impact of the proposed Federal action" in applying NEPA to a block grant situation where LEAA paid only 20 percent of the construction cost of the prison. Federal retention of the promotion and planning responsibilities was considered sufficient to bring the action within NEPA. In this decision, the Court greatly expanded the definition of actions affected by NEPA. The decision has meant applying NEPA to a wide range of Federal activities.

The U.S. Supreme Court has greatly extended the range of considerations in judicially reviewing the substantive content of impact statements. *Warm Springs Task Force vs Gribble* temporarily halted further construction of the Warm Springs Dam Project in the Russian River Basin, California. The Court gave great deference to findings by the

Council on Environmental Quality that the Army Corps of Engineers statement did not adequately consider the safety and water quality effects of the project. The Court required the Corps to revise its impact statement and ordered the lower Court to review this revised statement in light of CEQ's findings. Thus, for the first time, CEQ's findings as principal overseer of the NEPA process were considered by a Federal Court.

What's Happening?

The impact statement process has been designed to build into Federal agency thinking an environmental concern not heretofore implemented on an effective scale. Just as court interpretations are increasing general public environmental awareness, changes are being made within the structure of the Federal Government that will have profound influence on future Federal activities.

Half of all environmental impact statements have been written for roadbuilding actions undertaken by the Federal Highway Administration. The statements have resulted in significant planning changes. Examples include increased landscaping, the creation of hiking and bicycle trails along roadways, and, most importantly, the integration of mass transit routes into highway corridors and the overall coordination of highways into urban transportation system plans.

After highway construction, the second largest number of statements have been prepared for watershed protection and flood control projects. A portion of these projects are developed by the U.S. Army Corps of Engineers. Since NEPA was enacted, the Corps not only has established several citizen environmental advisory committees but has increased its interdisciplinary environmental staff by adding recreation resource planners, landscape architects, biologists, and foresters.

There has been a noticeable increase in the preparation of impact statements in the energy related area. The Energy Policy Office prepared an impact statement on its priority system for allocating low-sulfur petroleum products. The Interior Department has prepared impact statements on the sale of

oil and gas leases on the Outer Continental Shelf, on leasing Federal lands for oil shale and geothermal development, and on its coal mining plans.

Future statements on coal development will examine the physical effects of proposed strip mining, the competition between mining and existing uses of the land and water, and the comparative environmental costs of using coal as opposed to other energy sources.

As a direct result of NEPA's review process, a number of Federally-sponsored projects have been suspended in recent years and many more have been modified to protect the environment.

For example, in March 1972, a draft impact statement was prepared for a proposed 1760-foot pier for ocean research which would extend into the Atlantic from Maryland's Assateague Island National Seashore. The area is one of the few remaining natural barriers along the nation's eastern coastline under public ownership. Because of numerous opposing comments on the statement, the Corps of Engineers cancelled all construction plans.

Another project cancelled was a proposed dredging operation to improve safety for barge crossings in the Gulf Intracoastal Waterway from Carrabelle to the St. Marks River, Fla. The project was suspended when it was determined that the dredging would adversely affect the natural habitat of shellfish and other fish in the area.

Another project cancelled was a proposal by the Department of Health, Education, and Welfare for an incinerator to handle wastes from the Bethesda Naval Hospital, Walter Reed Army Medical Center, and the National Institutes of Health Bethesda Campus. After the draft impact statement showed several preferable alternative means of disposal, the HEW scuttled plans for the incinerator.

We are beginning to witness as environmental considerations are integrated into Federal agencies' plans, programs, and policy making, the elimination, before they reach the drawing board, of projects which would have had a significant impact on the environment. This so-called "institutionalization" of NEPA was the foremost objective of legislators and administrators who vigorously

pursued the enactment, and now the implementation, of the law.

Trends in State and Local Governments

Recognizing the need for broader consideration of environmental consequences at an early date, a number of states have passed statutes requiring environmental impact statements on state actions analogous to the statements required of Federal agencies by NEPA. These states include California, Indiana, Maryland, Massachusetts, Minnesota, Montana, Connecticut, Hawaii, South Dakota, North Carolina, Virginia, Washington, and Wisconsin, as well as the Commonwealth of Puerto Rico. New Jersey, Michigan, and Texas have implemented impact statement requirements through Executive Order. In addition, Arizona, Delaware, Georgia, Nebraska and Nevada have required impact statements to be prepared for certain limited classes of projects.

Similar action was being considered in approximately fifteen other states.

Even though the implementation of these State programs has been slow and the net effect so far appears to be fairly small, there is a widespread interest in NEPA-type State legislation and with good reason. The potential value of environmental impact statement requirements in the states is at least as great as at the Federal level.

All in all, important innovations in Federal and State environmental regulations are taking place. At both levels, the pace of institutional development in environmental management has increased significantly over the last few years.

U.S. Environmental Protection Agency Washington, D.C. 20460

Regional Offices	States covered
Boston, Massachusetts	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
New York, New York	New Jersey, New York, Puerto Rico, Virgin Islands
Philadelphia, Pennsylvania	Delaware, Maryland, Pennsylvania, Virginia, West Virginia, D.C.
Atlanta, Georgia	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
Chicago, Illinois	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
Dallas, Texas	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
Kansas City, Missouri	Iowa, Kansas, Missouri, Nebraska
Denver, Colorado	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
San Francisco, California	Arizona, California, Hawaii, Nevada, American Samoa, Guam, Trust Territories of the Pacific, Wake Island
Seattle, Washington	Alaska, Idaho, Oregon, Washington

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STUDENT ACTIVITY: FORCE-FIELD ANALYSIS

One tool to help you analyze a State land disposal is a force field analysis. This is a way to think about the pressures placed on different "environments." For example, list out the various factors that may positively or negatively impact your village if a land disposal takes place.

The four "environments" potentially affected are: social, cultural, economic, and physical. Briefly, "social" refers to the way your community is organized. "Cultural" means the values, traditions, and lifestyle of your group. "Economic" refers to ways in which people make money and to the total amount of dollars, goods, and services that come in and out of a region. "Physical" has to do with various habitats and their quality.

With this in mind, list out the major changes that may occur to your area within these areas.

Social

- 1.
- 2.
- 3.

Economic

- 1.
- 2.
- 3.

Impacts of State Land Disposal

Cultural

- 1.
- 2.
- 3.

Physical

- 1.
- 2.
- 3.

STATE LAND DISPOSAL

LESSON 4: Analysis: Impacted Areas - State Land Disposals

Time: One to two class periods.

Teacher's Note

This activity is best done if a State land disposal is actually going to occur in your area or is projected for your area. Since DNR policy calls for local input, protection of local wildlife habitat, and support of local subsistence use, this is an opportunity to involve students and community in the decision-making activity. A note of caution: it is best in politically sensitive issues to act as a facilitator, providing information and encouraging inquiry and problem solving. Do not take a position yourself unless invited to do so by the community. At the present time we can anticipate proposed settlement areas in the Nushagak and Mulchatna River drainages and in the eastern side of Lake Iliamna.

Objectives:

1. Students will learn how to inventory land resources.
2. Students will be able to assign value to and rank the importance of the land to the community.
3. Students will keep careful records.

Procedures:

Select those areas of land disposal that are of concern to the students.

1. Identify those proposed State land disposals that are near your community and have the students review the size of the disposals. Students can inventory the land using the maps included in the kit. (Use outline on following page.)
2. Have the students rank-order these disposals in terms of importance to the community for fish and wildlife, and for other community values. Students will need to rely on their knowledge of the land. If that is insufficient, they will have to collect information from community members using large scale maps. (If rank-ordering is not an appropriate activity, have them build a case for or against each projected disposal.)
3. Use the 1:63,360 map of your area for best results.
4. Importance to Community. The subsistence value of the "disposal" land to the village needs to be demonstrated. This must be done on a community basis, that is, students should not concentrate on any one individual's hunting or trapping area, nor their exact worth to any one individual. Instead, the students should demonstrate, in a general way, the value of the area to the community as a whole. The value of the area can be described in terms of social, cultural, and economic importance. Keep careful records.

5. Public Meeting. Invite the community to hold a public meeting on the State land disposal. Do not do this activity unless you have the support of the CSC and community leaders. Also, the community may be holding its own public meetings with or without representatives from DNR. Either way, you have an opportunity to involve the students in public participation. The students can collect opinions and concerns of the community, make a videotape which documents these concerns, and send it to the DNR.

Note: Even if a State land disposal is not occurring near your community, impacts may still be felt by community members. For example, people from Togiak often hunt in the Mulchatna River drainage area and a State land disposal in Jack Rabbit Hills could affect Togiak.

Inventory Proposed Land Disposal

- A. Spawning Grounds:
Species:
 - 1.
 - 2.
- B. Wintering Area for Game
- C. Calving Area
- D. Prime Hunting Area
- E. Used by How Many Communities
- F. Other

Have students keep careful records of their inventories.

STATE LAND DISPOSAL

LESSON 5: Shaping the Disposal for Least Harmful Impact

Time: One class period.

Introduction

If a disposal will occur it should be situated in the area so that the least impact would occur to fish and wildlife and to existing uses. You will need site specific information: DNR map of the disposal or the topographic map for this unit. In this activity, have the student place the State land to be disposed on in such a manner that it has the least impact on the area.

Objectives:

The students will be able to plan out a "land disposal" that has minimal impact on subsistence.

Procedures:

1. Have the students set up the criteria for least impact. Ascertain from the class what features of the environment are most and least "sensitive" (easily disturbed by too much use). Each student should have a photocopied map of the proposed site, or work in small groups using the 1:63,360 topographic map of your area. Note criteria could include calving or wintering area, fragile ecosystem, or intensive subsistence use.
2. How many acres of least sensitive areas are there? Mark an acetate over the map.
3. Mark an acetate over the map by noting the most sensitive areas.
4. Using the student's data, determine the size of the area that provides for the impact. This could be your recommendation to DNR for an acceptable State land disposal in your area.

STATE LAND DISPOSAL

LESSON 6: Guidelines for Land Disposal

Time: One to two class periods.

Objectives:

1. The students will evaluate existing guidelines for State land disposals.
2. The students will communicate their thoughts on guidelines for State land disposals to the appropriate agencies.

Procedures:

1. Have the students read text and policies.
2. Have the students listen to the audiotape by Greg Peters (see transcript following text).
3. Have the class work on changing, adding, or deleting any rules, if necessary.
4. Have students write to Greg, or make an audiotape.
5. With each addition or deletion, have the students justify their comments. Their recommendations should be sent directly to CRSA, c/o BBNA, Dillingham, Alaska 99576. Also, send a copy to Tom Hawkins, Department of Natural Resources, 555 Cordova, Anchorage. The DNR is the lead agency in State land disposals.

Text and policies:

Establishing Guidelines For Land Disposal

The Coastal Service Area Board (CRSA) and the Bristol Bay Cooperative Management Plan (BBCMP) are seeking public input on their management policies.

You have had an opportunity to study land disposals. You know that it is a dream for many people to own land, and have a place in the "wilderness" and that the State land disposal program, in part, is meeting this need. You also have seen that there are federal and state laws to protect subsistence use and one policy is sensitive to fish and wildlife, and existing uses of the land.

Even so, the Coastal Service Area Board has the authority to establish regulations that would govern or suggest to DNR how they should proceed when having State land disposals. Greg Peters, the director of the Bristol Bay Coastal Service Area Board, outlines the draft policy. Listen carefully to him.

The teacher will play you a tape of Greg's comments. A transcript of the tape is printed below, so that you can read along while it's playing.

After listening to the tape, add and/or delete any rule or regulation that you disagree with. Send CRSA your recommendations.

CRSA
BBNA
Dillingham, AK 99576

Edited Transcript of Greg Peters' Tape: CRSA Guidelines

Hi, my name is Greg Peters. I work for the Bristol Bay Coastal Resource Service Area Board. By now you've probably heard about that entity. It's a group of local people who have been elected to come up with some land and water use that we've been thinking about, and that we'll be discussing in 1983 and 1984. We definitely could use some help from everybody in the region in finalizing these rules. One thing that we've learned during the past year, or year and a half, is that people of Bristol Bay definitely want to keep the fish and wildlife populations in their habitat in good shape; that's the number one priority of the people. So when we sat down and started coming up with some of these rules, and we started from this "fish first" approach. But we have to refine it a little more than that. And that's what we'll be going through right now. I've got about twelve rules and then a couple other more specific ones. But we'll go through them on this tape right now. Basically, the approach we've taken is to protect the fish and wildlife, particularly the land and the water that they need to survive. The Alaska Department of Fish and Game has the responsibility to regulate the hunting of the fish and game. We don't address that in the coastal management program. By law, we can't. So, it's still up to Fish and Game to decide the seasons and how many animals you can take and who gets to take them. What we're responsible for are the rules that make sure that there's enough water for the fish, that there's enough forage land for

caribou, that there's enough willow and alder for moose, and that kind of thing. So that's the approach we take here and if you're wondering why we don't say, "villagers get first chance at moose," we're not allowed to say that. You'll have to go to Fish and Game for that.

Okay, now let's start out with some of the rules that we've come up with. These are under the heading of "Fish and Wildlife in Their Habitat." When we talk about the land and water that animals need to live, we call that "habitat."

Our Number One Rule Reads as Follows:

Fish habitat will be maintained in a condition that supports the continued healthy growth and propagation of important species. "Propagation" means birth; the life cycle keeps going. This is a pretty general rule and, basically, what we're saying is that we want the water quality in streams, we want enough wet tundra, (that's what caribou like), the wet sedge grasses we want enough willow and alder around so that these animals and fish will be able to continue to grow and be healthy. That's a pretty general one but, at the same time, if there's any kind of activity proposed that would hinder this healthy growth, then it's not going to be allowed. Let's go on to a little more specific rule. This one pertains mostly to fish, but it also appears to other animals.

The Second Rule Is:

Water appropriation, and that means, basically, taking water out of a stream or a lake and using it somewhere else. Water appropriation from lakes, rivers and streams will not be permitted if it is determined that important fish and wildlife populations and habitat would be damaged. What this refers to is, say, something like a dam. Dams appropriate water; it's also an obstruction across the water, but in some cases they just divert water from the main river into a facility that creates electricity. What we're saying here is maybe you'll be able to do this, but for sure you can't do it if it's going to damage fish and wildlife habitat. You've got to leave enough water in the stream to maintain the habitat for fish. There's also some other reasons, other animals depend on that water flow also, as well as the trees and vegetation along the streams. So, it's very important to maintain those flows in the river.

The Third Rule Is:

Natural buffers will be retained on lands adjacent to fish habitat in order to minimize impacts on water quality and condition. When we say "natural buffers" we mean basically the vegetation that's along the sides of streams. What happens when you strip away that vegetation of trees and grass is, first of all you get a lot of erosion. You've probably all seen that along the rivers where the bank is eroding and falling in. Then you have a lot of dirt in the stream and sooner or later it will settle on gravel downstream or something and it might either smother fish eggs or completely cover up the gravel that they use to spawn in. What we're saying here is you have to keep those natural buffers. Also, in a lot of places the vegetation - the trees - along the side of the creek shade the water, which keeps it cool. So, if you remove that it has the effect of warming up the water and a

lot of times fish don't like warm water and it'll mess up their whole life cycle. So, we're just basically saying, keep the trees along the streams.

The Fourth Rule Is:

Development in or over water such as piers, docks and protective structures will be located, designed and maintained in a manner which prevents decreases in water quality and disruptions to fish migration. Basically, what this means is, don't block the streams where fish are and if you're going to be building something right on the water or right over it, make sure it's pretty clear, make sure you don't have a bunch of oil and grease and chemicals and everything going in the water. That's pretty basic. So far, all these rules have pertained to fish. Let's move on now to moose and caribou.

The Fifth Rule Is:

The animals need a lot of territory for one thing. Moose prefer willow and alder and low brush; caribou prefer more open land tundra, and wet sedge grass. For both of them, the way we approach it is to make one policy: simply, moose and caribou habitat will be retained in amounts with such quality as necessary to support historic levels of these populations. Basically, what we are saying here is right now there's plenty of land to go around for both of these, moose and caribou. Sometime — maybe 50 years, 100 years, 200 years, who knows — it may come to a point that land starts getting scarce and the people at Fish and Game are going to have to make a decision and say, "You know, 20,000 caribou need, let's say 100,000 acres if they're going to survive and be healthy." If there's only 100,000 acres left in Bristol Bay, the way this policy reads is that 100,000 acres is going to have to remain open to the caribou. So right now we really don't have to worry about it, but definitely, in the future, it will be important.

The Sixth Rule Is:

Okay, here's a policy designed for waterfowl, these are ducks and geese, it reads, "Activities that alter natural hydrological, let's say water conditions, and have an adverse impact on critical waterfowl habitat will be avoided." That's pretty straightforward and, basically, we're just saying don't drain lakes along the coast, these wetlands and marshes that the birds use when they migrate during the winter, fall and spring. We're just saying that any kind of activity that going to mess up these wetlands, you can't do it if it's going to impact the waterfowl.

The Seventh Rule Is:

Here's one for marine mammals and other seabirds and raptors which are basically eagles or maybe falcons. It reads, "Marine mammal haul-out sites, seabird colonies and raptor nesting sites and brown bear dens will be maintained in their natural state." Basically, that means you just simply can't go over to Walrus Island and start mining there. They like those rocks, they like to haul out there, that's where they do it and just leave it as it is. There's really no compromise there. That's critical habitat and it has to be left the way it is.